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CALIFORNIA DEPARTMENT OF FISH AND GAME, COASTAL MARINE MAMMAL STUDY, ANNUAL REPORT FOR THE PERIOD JULY 1, 1984 - JUNE 30, 1985

By

Doyle A. Hanan

ADMINISTRATIVE REPORT LJ-86-25C

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CALIFORNIA DEPARTMENT OF FISH AND GAME, COASTAL MARINE MAMMAL STUDY, ANNUAL REPORT FOR THE PERIOD JULY 1, 1984 - JUNE 30, 1985

Doyle A. Hanan
Project Leader

California Department of Fish and Game
c/o Southwest Fisheries Center
La Jolla, California 92038

OCTOBER 1986

This report was prepared by Doyle A. Hanan under contract No. 81-ABC-00182 for the National Marine Fisheries Service, Southwest Fisheries Center, La Jolla, California. The statements, findings, conclusions and recommendations herein are those of the author and do not necessarily reflect the views of the National Marine Fisheries Service. Dr. Wesley Parks of the Southwest Fisheries Center served as Chief Official Technical Representative for this contract.

ADMINISTRATIVE REPORT LJ-86-25C

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COASTAL MARINE MAMMAL STUDY, ANNUAL REPORT FOR THE PERIOD JULY 1, 1984 - JUNE 30, 1985

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INTRODUCTION

This report presents results of ongoing research projects by California Fish and Game's coastal marine mammal project. These projects are part of a cooperative effort with National Marine Fisheries Service to identify and monitor interactions between marine mammals and fisheries. In addition, project personnel have participated in cooperative efforts to determine the status of marine mammal stocks off California by investigating abundance, distribution, and migratory patterns.

Presented in this report are the results of the 1985 harbor seal census and the shark/swordfish drift gill net observation program.

HARBOR SEAL, *PHOCA VITULINA RICHARDSI*, CENSUS IN CALIFORNIA, MAY 28-31 AND JUNE 25-30, 1985

by

Doyle Hanan, John Scholl, and Sandra Diamond

INTRODUCTION AND METHODS

California Department of Fish and Game (DFG) initiated an annual harbor seal, *Phoca vitulina richardsi*, census along the mainland California coast in 1981 as part of a cooperative marine mammal assessment program with National Marine Fisheries Service (NMFS). The data gathered from these censuses are to be used in the development of an annual index of abundance, which could be used to detect population trends and changes in distribution. The first census was incomplete but allowed refinement of techniques for subsequent censuses. Those techniques and the results of the 1982, 1983, and 1984 censuses are reported in previous annual reports (Miller et al. 1983, Hanan et al. 1985, and Hanan et al. 1986).

This report presents results of the 1985 census, which employed the previous survey techniques as closely as field conditions permitted. The survey was flown at 600 feet altitude in a Cessna 185 equipped with an optical glass photography port fitted in the belly of the plane for vertical pictures which have less counting bias than oblique photographs. The sites were photographed sequentially from south to north taking advantage of the northward progression by time and location of the low tide. Some sites were photographed on consecutive days to assure adequate coverage. The survey team consisted of a pilot, recorder, and photographer using a Hasselbald model 500-ELM camera with a 100 mm f3.5 lens and motordrive. Kodak 64 or 200 ASA Ektachrome film was used depending on lighting conditions determined by a Soligor II spotmeter[1]. A Nikon 35 mm camera, 100 mm lens, and motordrive were available in case of Hasselbald malfunctions.

Counts of harbor seals were made by viewing rolls of developed film through dissecting microscopes. Each seal was counted by making a mark over the seal on a thin plastic sheet which had been placed on the photograph. Seals not easily identified as pups were counted as adults. Counts were recorded by hauling site number and transferred to a computer database.

Besides the aerial surveys, 27 known hauling sites were surveyed by observers from the shore (ground counts). These observers counted seals each half hour or, if numbers were large,

[1] Use of brand names does not imply endorsement by DFG or NMFS.

as frequently as conditions permitted. Ground counts were made using binoculars or spotting scopes, from one hour before low tide to an hour and a half after low tide. For each day censused, the maximum count at each site was entered into the database. If the ground count exceeded the aerial count for a particular site, the ground count was used for the mainland total (Appendix I).

The harbor seal census database includes both aerial and ground count information stored in a separate file for each census. The files were created using the database management program, dBASE II[2]. The files are maintained with individual records for each hauling site along the California coast. The records contain descriptive information about the site as well as the seal counts.

RESULTS

Harbor seals occupied 276 of 581 (48%, Table 1) mainland hauling sites (compared with 57% in 1982, 38% in 1983, and 42% in 1984; Miller et al. 1983, Hanan et al. 1985, Hanan et al. 1986). Of the occupied sites, 63 were newly recorded sites, where seals had not previously been recorded. We counted 12,530 seals including 777 pups (Appendices I and II). As in the previous censuses, counties north of San Francisco Bay had the largest numbers of seals and accounted for 57% of the mainland total (Table 2). This percentage is in the same range as the previous censuses (56% in 1982, 56% in 1983, and 63% in 1984).

The southern California islands were surveyed using the same techniques as used for the mainland. The total count for all eight islands was 2,280 seals, which was lower than the previous counts and continues a downward trend: 1984 was 3,218 seals, 1983 was 3,635 seals, and 1982 was 3,892 seals (Table 3).

Combining the island and mainland counts (2,280 and 12,530 seals) and assuming little movement between counting areas yields a June 1985 count of 14,810 harbor seals in California. This California total is close to the 1984 and 1983 totals but lower than the 1982 total (Table 2).

[2] A trademark of Ashton-Tate, 10150 West Jefferson Boulevard, Culver City, California 90230.

ACKNOWLEDGMENTS

We thank the two DFG warden-pilots, Larry Heitz and Joe Santana, who flew this survey for us. We also thank the people who donated their time to do the ground counts: V. Torres, P. Yochem, M. Klope, C. Kuizenga, C. Woodhouse, C. Pergler, R. Hardy, L. Laurent, J. Bodkin, R. Jameson, L. Maul, A. Rubin, J. Spratt, A. Baldrige, J. Leupel, D. Moehle, G. Kwiechien, T. Weist, J. Hardwick, J. Ames, D. Miller, S. Allen, K. Karpov, P. Pyle, C. Depkin, H. Huber, and S. Johnston. Finally we express appreciation to Doug DeMaster, Jim Lecky, and Chuck Oliver for their help in these studies.

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TABLE 1. Harbor seal counts with the number of sites and occupied sites by county for the May 28-31, 1985 census (DN= Del Norte, H= Humbolt, MEN= Mendecino, SON= Sonoma, MAR= Marin, CC= Contra Costa, SF= San Francisco, ALA= Alameda, SM= San Mateo, FI= Faralon Islands, SC= Santa Cruz, SCL= Santa Clara, M= Monterey, SLO= San Luis Obisbo, SB= Santa Barbara, V= Ventura, SD= San Diego).

COUNTY	ADULTS	PUPS	COMBINED	%TOTAL	#SITES	#OCCUPIED	SEALS/SITE
DN	868	2	870	7	14	8	109
H	1503	137	1640	13	52	31	53
MEN	1524	57	1581	13	76	47	34
SON	987	136	1123	9	93	38	30
MAR	2255	217	2472	20	55	22	112
CC	95	4	99	<1	1	1	99
SF	53	0	53	<1	1	1	53
ALA	70	6	76	<1	3	1	76
SM	579	26	605	5	37	17	36
FI	32	0	32	<1	*	*	*
SC	343	16	359	3	12	8	45
SCL	62	5	67	<1	1	1	67
M	1126	64	1190	9	104	41	29
SLO	1006	59	1065	8	100	43	25
V	70	2	72	<1	1	1	72
SB	1164	46	1210	10	26	14	86
SD	16	0	16	<1	4	1	16
TOTAL	11,753	777	12,530	100	581	276	46

*MULTIPLE SITES INCLUDED AS ONE COUNT

TABLE 2. Harbor seal counts by year with number of sites and number of occupied sites.

	1982	1983	1984	1985
#SITES	426	482	518	581
#OCCUPIED	243	185	218	276
%OCCUPIED	57%	38%	42%	47%
#SEALS	13,026	10,752	10,885	12,530
%NORTH OF SAN FRAN.	56%	56%	63%	57%

TABLE 3. Southern California Channel Island harbor seal counts by year (SCI=San Clemente Island, CAT=Santa Catalina Island, SBI=Santa Barbara Island, SNI=San Nicolas Island, ANA= Anacapa Island, SCR=Santa Rosa Island, SMI= San Miguel Island)

	SCI	CAT	SBI	SNI	ANA	SCR	SRI	SMI	TOT
1982*	9	68	2	609	237	809	1059	1178	3892
1983*	31**	82**	0	609**	174	640	978	1123	3635
1984	58	174	0	380	116	888	938	664	3218
1985	67	117	31	139	207	515	585	619	2280

*Stewart 1982
**Estimate by the authors

DRIFT GILL NET OBSERVATIONS FOR THE 1984-85 FISHING SEASON

by

Sandra Diamond, Doyle Hanan, and John Scholl

INTRODUCTION

Marine mammals interact with many commercial and sport fisheries in California. In some fisheries, (e.g. the salmon troll fishery) depredation by marine mammals results in major revenue losses, while in other fisheries (e.g. the gill net fisheries), marine mammal mortality is a primary management concern (Miller et al. 1983).

In the pelagic shark/swordfish drift gill net (DGN) fishery, California sea lion (Zalophus californianus) mortality from net entanglement has been a major concern. Between 600 and 1200 sea lions were estimated killed in the DGN fishery during September 1980 - September 1981 (Miller et al. 1983). Mortality estimates were based on a Department of Fish and Game (DFG) observer program, which was mandated by state legislation. Additional legislation in late 1982 required time and area fishing closures (Appendix III) and removed the mandatory observer program in spite of concern about the incidental take of marine mammals. The revised observer program was devised to address the question of the incidental take of marine mammals and about 900 sea lions were estimated killed during that season (Diamond et al. 1985). That estimate decreased from the level observed during 1980-82, although direct comparisons between 1980-82 and 1983 were complicated by the changes in fishing regulations and revisions in the sampling method. Additionally, changes in the distribution and behavior of fish and marine mammals, as well as altered fishing techniques associated with the El El Nino of 1983 made comparisons difficult.

This paper presents results from the revised observer program for the 1984 fishing season, May 1984 through January 1985. An estimate of the number of California sea lions killed incidentally in the fishery is included in this report and compared to estimates from previous years.

METHODS

The revised observer program was designed to allow random sampling of DGN vessels at sea. To minimize altered fishing techniques due to an observer's presence, DGN vessels were contacted at sea immediately prior to net retrieval or pull. Once permission to board was obtained from the skipper, an observer was transferred from the research vessel to the fishing vessel by skiff or inflatetable; observers remained aboard fishing vessels only for the duration of the net pull. During rough weather, observations were made from the research vessel using 7 to 10 power binoculars. Refusals to board the fishing vessels were rare; however, in such instances observations were made from the deck of the research vessel or a skiff stationed alongside the fishing vessel.

Ten observation days were scheduled each month, but were occasionally limited to fewer days because of poor weather or poor sighting conditions. The DFG research vessel KELP BASS was used for trips during May and June. A chartered research vessel, the WEST WIND was used for trips from August through January (Table 1). No trips were made during June since a research vessel was not available. These research vessels were used primarily for transportation to the area chosen for observation, and to house three or four observers. Sampling areas were chosen based on reports obtained from DFG market samplers, pilot-wardens, and past experience with the fishery. If no boats were sighted at the chosen location, another area was selected. Search effort was generally limited to the areas around the Channel Islands, Cortez and Tanner Banks, and Morro Bay.

Observers gathered information on the length and width of the net, the mesh size, the corkline depth, and the time the net was set and pulled. The date, area by Fish and Game block number (Appendix IV), and location by Loran reading were also recorded. Net slack, as measured by hanging length and the number of meshes per hanging, was also recorded.

Data collected on catch were: 1) numbers by species; 2) shark sex, length, and reproductive condition; 3) swordfish fork and alternate lengths; and 4) marine mammal species, sex, and total length. Whenever the DGN skipper permitted, a numbered brown Temple tag was inserted into the hind flipper of incidentally killed pinnipeds before they were discarded.

The estimate of California sea lion mortality was based on total fishing effort as shown by skippers daily fishing logs, and the observed kill of sea lions. Kill estimates were calculated in two ways: using a Poisson distribution, and using the Bootstrap technique. These methods are described in detail in Diamond and Hanan (in press).

RESULTS

Forty-four net pulls representing less than 1% of the total fishing effort were observed from May 1984 through January 1985. Observations were made in every fishing month except July, when a contract for chartered vessel service was being negotiated. The largest number of observations was made in November (18) and the least in August (2) and December (1). This sampling effort compares favorably with a peak of total fishing effort in November and lows in June, July, August, and December as reported on skipper's daily fishing logs (Figure 1). All but two observations were made in southern California with most vessels observed near Santa Barbara, Santa Cruz, and Santa Catalina Islands (Figures 2 and 3). Fishing was reported as far north as San Francisco, but 81% of the total fishing effort was reported in southern California (Figure 4).

Net characteristics varied a great deal among observed nets (Table 2) and among nets reported on logs. Average observed net length was 905 fms, with a range of 550-1000 fms. About 60% of the observed nets and 70% of the reported nets were longer than 900 fms (Figure 5). Width of observed nets averaged approximately 18 fms, with a range from 10 to 31 fms. Mesh sizes (stretched measurement) of observed nets were obtained by averaging all mesh sizes on a single net and found to range from 14 to 22 inches with a 17 inch average over all observed nets. The most common mesh sizes for both observed and reported nets were 16 and 18 inches (Figure 6). Corkline depth of observed nets averaged 4 fms, and ranged from 2 to 8 fms. The most common corkline depths in both observed and reported nets were 3 to 4 fms (Figure 7).

Changes in observed catch composition occurred between the 1984 season, the 1983 season, and the same months of the combined 1980-82 seasons (Table 3). During 1984, warm water species such as skipjack and bonito, that were present in large numbers during 1983, returned to the lower levels observed in 1980-82. Species not previously recorded were observed during 1984, such as albacore and a megamouth shark (this was the second specimen of this species ever recorded). The catch rate of common thresher shark declined during the three sampling periods, while the catch rate of mola in the 1984 season was almost 4 times greater than either 1983 or 1980-82.

One California sea lion, three common dolphins (Delphinus delphis), and one minke whale (Balaenoptera acutorostrata) were observed caught during the 1984 season (Table 4). The sea lion and one common dolphin were taken at Osborne Bank near Santa Barbara Island. Another common dolphin and the minke whale were

taken south of the eastern end of Santa Cruz Island. The third dolphin was taken off the south end of Santa Catalina Island (Figure 2). All dolphins were immature males.

The catch rate of California sea lions (Table 3) decreased during the three time periods, although the difference was not significant between any of the years (Mann-Whitney U test, $P>.05$). Based on total fishing effort and observed kills, approximately 225 sea lions were estimated incidentally killed in the DGN fishery during the 1984 season: the Poisson calculation estimated 218 $\pm$220 (S.E.) sea lions killed, and the Bootstrap model estimated 236 $\pm$226 (S.E.) sea lions killed.

DISCUSSION

The DGN fleet appears to be changing rapidly. More fishing is taking place north of Pt. Conception and at the offshore seamounts each year, primarily because of the shift in target species from thresher shark to swordfish. This shift is illustrated by increased fishing effort during the fall, prime swordfish season, relative to the spring and early summer months, which are traditional thresher shark months. Longer nets are being used, with over 60% of the observed nets longer than 900 fms in 1984 and only 38% longer than 900 fms in 1983. Mesh size is also increasing, with a 1984 observed range of mesh sizes of 14 to 22 inches, averaging 17 inches, and a 1983 observed range of 10 to 19 inches, averaging 16 inches.

Both the observed catch rate and the estimated kill of sea lions decreased from 1983 to 1984. The kill is estimated at 900 $\pm$ 425 (S.E.) in 1983, 225 $\pm$ 223 (S.E.) in 1984). This apparent decline could be due to several factors or combinations of factors: 1) the effectiveness of the time/area closures imposed by SB 1573, 2) the shift in target species from thresher shark to swordfish, with subsequent changes in fishing techniques by time, location, mesh size, etc. and 3) possible changes in the sea lion population making them less available to the fishery, either because of density dependent factors, or the El El Nino conditions of 1983 and 1984. Although every effort was made to increase the number of observations, it is also possible that the sample size was too small to accurately estimate incidental take, and the apparent decline is an artifact. Finally, given the lack of observations north of Point Conception and at the offshore seamounts, it is unknown whether our estimates of incidental take, based almost entirely on observations in southern California, accurately reflect the rates of incidental take for the entire fishing fleet.

In conclusion, although there is apparently a large decline in the numbers of sea lions killed in the DGN fishing, it is essential that we increase the sample size, and obtain samples north of Point Conception and at the offshore seamounts to accurately assess the impact of this fishery on marine mammals.

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TABLE 1: DATES and LOCATIONS of 1984 OBSERVATION CRUISES

CRUISE DATES	RESEARCH VESSEL	APPROXIMATE SEARCH LOCATION
May 7-10	KELP BASS	San Clemente Is., Cortez and Tanner Banks
May 22-25	"	San Clemente Is., 43 Fathom Spot, Santa Barbara Is., Lausen Knoll
June 4-8	"	Santa Cruz Is., Lausen Knoll Santa Barbara Is., Dana Pt., Pt. Dume
June 25-29	"	Morro Bay, Avila
August 2-5	WEST WIND	San Nicolas Is. (radar out)*
August 27-31	"	San Nicolas Is. (weather)*
September 17-21	"	Santa Cruz Is. (weather)*
September 24-28	"	Santa Barbara Is., Anacapa, Santa Cruz Is.
October 17-20	"	Santa Cruz Is. (weather)*
October 24-26	"	Santa Cruz Is.
October 29-November 2	"	Morro Bay (weather)*
November 12-16	"	Santa Barbara Is.
November 26-30	"	Santa Catalina Is.
December 12-13	"	Santa Catalina Is. (weather)*
December 17-19	"	San Clemente Is., 43 Fathom Spot (weather)*
January 14-18	"	Santa Catalina Is., Anacapa Is., San Clemente Is.
January 21-26	"	San Clemente Is., Tanner and Cortes Banks

* Parentheses indicate problem which shortened trip or hampered observations.

TABLE 2: CHARACTERISTICS OF OBSERVED GILL NETS

	MEAN	RANGE	NETS OBSERVED
Net length	905 fathoms	550-1000 fathoms	42
Net width	17.9 fathoms	10.7-31.2 fathoms	43
Mesh size	17 inches	14-22 inches	44
Corkline depth	4 fathoms	2.0-8.0 fathoms	43
TOTAL OBSERVATIONS			44

TABLE 3: MAY-JANUARY AVERAGE CATCHES PER OBSERVED NET PULLED

COMMON NAME	1984	1983	1980-1982 (combined)
MARINE MAMMALS			
California sea lion	.023	.085	.364
Common dolphin	.068	0	0
Elephant seal	0	.028	0
Finback whale	0	0	.004
Minke whale	.023	0	0
Pilot whale	0	0	.009
White-sided dolphin	0	0	.004
SHARKS			
Basking shark	0	0	.004
Blue shark	3.864	3.296	3.737
Bonito shark	.614	1.197	2.539
Bull shark	0	0	.009
Hammerhead (No ID)	0	0	.022
Smooth hammerhead	0	.493	.009
Megamouth shark	.023	0	0
Soupfin shark	0	0	.048
Big-eye thresher shark	.023	.070	.026
Common thresher shark	.136	.423	2.785
Pelagic thresher shark	0	.056	0
BILLFISH			
Marlin	.068	.085	.048
Swordfish	1.932	1.070	1.496
RAYS			
Bat ray	0	0	.022
Manta ray	0	.014	.004
Mobula	.091	.028	.057
Skate	.023	0	0
Sting ray	.136	.014	.035
MISCELLANEOUS FISH			
Albacore	.568	0	0
Anchovy	.023	0	0
Bluefin tuna	.023	0	.004
Bonito	.795	5.535	.684
Hake	.159	.042	.088
Kelp bass	0	.014	0
Mackerel (No ID)	.136	0	0
Bullet mackerel	.068	0	0
Pacific blue mackerel	.023	.817	1.211
Mola	4.636	1.254	1.452
Ocean whitefish	0	.028	0
Opah	.250	.282	.066

TABLE 3: (CON'T.)

Pipefish	0	0	.053
Remora	0	.014	.048
Skipjack	.273	1.606	0
White sea bass	0	0	.004
Yellowfin tuna	.091	.300	.075
TURTLES			
Redley's	0	.014	0
Loggerhead	0	.014	0

TABLE 4: MARINE MAMMALS OBSERVED TAKEN IN DRIFT GILL NETS

DATE	FISHING BLOCK	COMMON NAME	NUMBER TAKEN
10/80	746	Ca. sea lion	1
11/80	757	Pilot whale	2
4/81	757	Ca. sea lion	1
	806	"	2
	862	"	2
	912	"	1
	916	"	1
5/81	721	"	1
	912	"	1
6/81	656	"	1
	670	"	5
	688	"	1
	706	"	1
	805	Finback whale	1
	812	Ca. sea lion	2
7/81	687	"	1
	730	"	15
	812	"	4
	835	"	2
8/81	703	"	1
	764	"	1
9/81	811	"	2
	883	"	1
10/81	723	"	1
	742	"	2
	867	"	1
	879	Whitesided dolphin	1
3/82	897	Whale (No ID)	1
4/82	686	Ca. sea lion	1
	686	Harbor seal	1
	720	Ca. sea lion	1
5/82	691	"	2
	691	Whale (No ID)	1
	714	Ca. sea lion	28
	728	"	1
	733	"	7
5/83	706	Ca. sea lion	1
6/83	656	"	2
	"	Elephant seal	2
	707	Ca. sea lion	1
10/83	706	"	1
	707	"	1
9/84	708	Common dolphin	1
	"	Minke whale	1
11/84	764	Ca. sea lion	1
	764	Common dolphin	1
	806	"	1

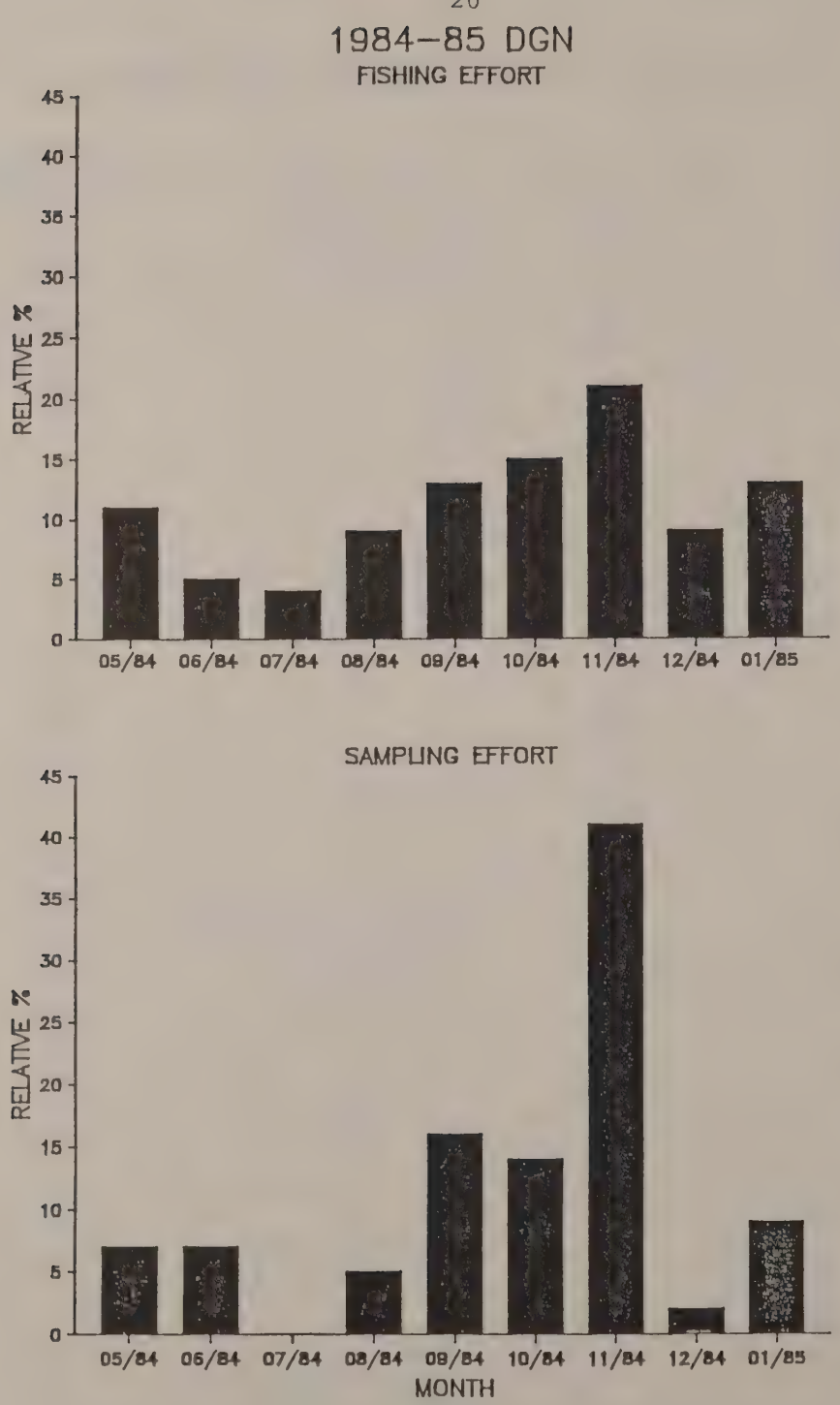


FIGURE 1. Relative percentages of fishing effort and sampling effort by month in the DGN fleet, May 1, 1984 - January 31, 1985.

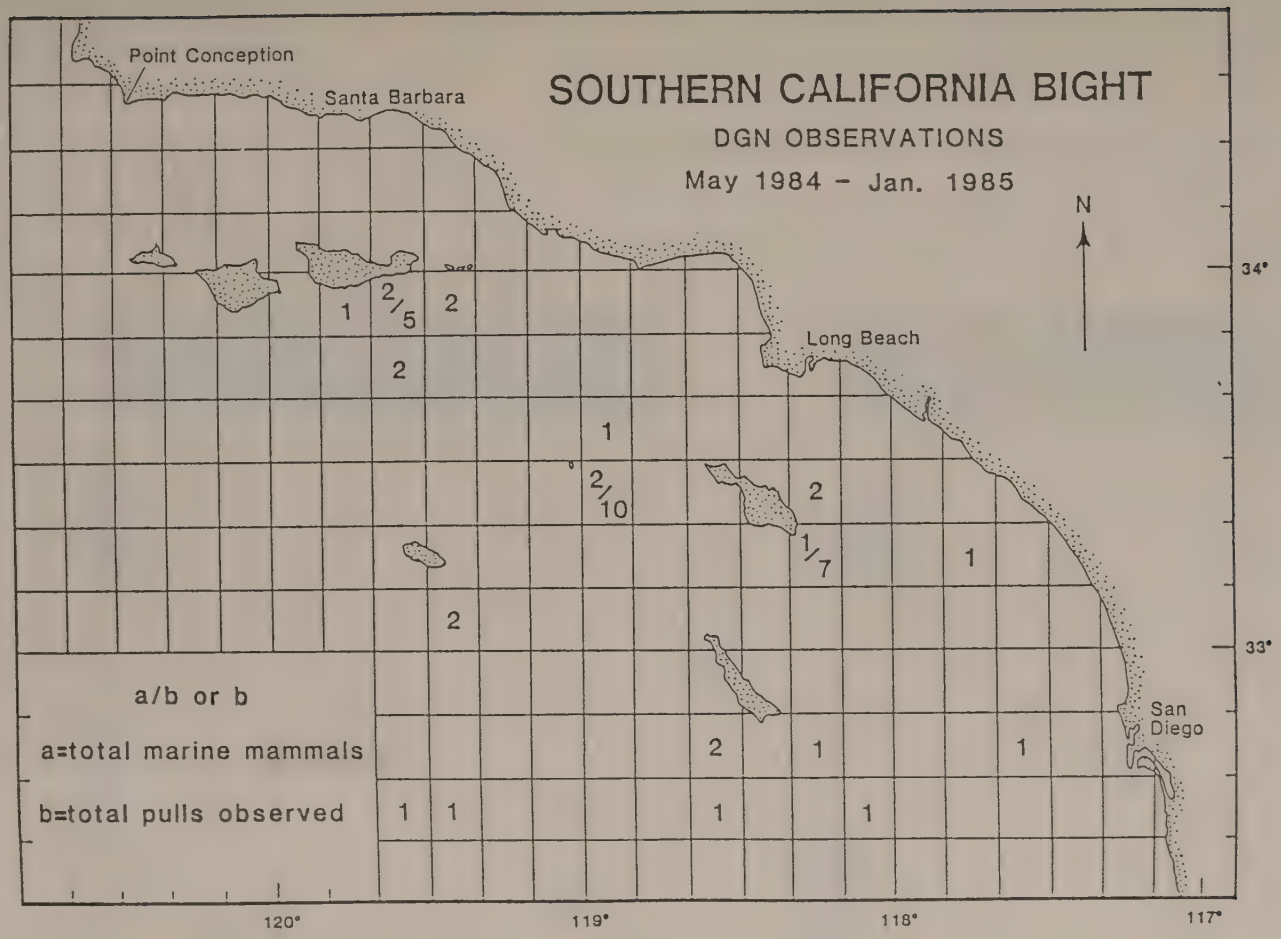


Figure 2. Locations of DGN observations and total marine mammal take in the Southern California Bight, May 1, 1984 - January 31, 1985.

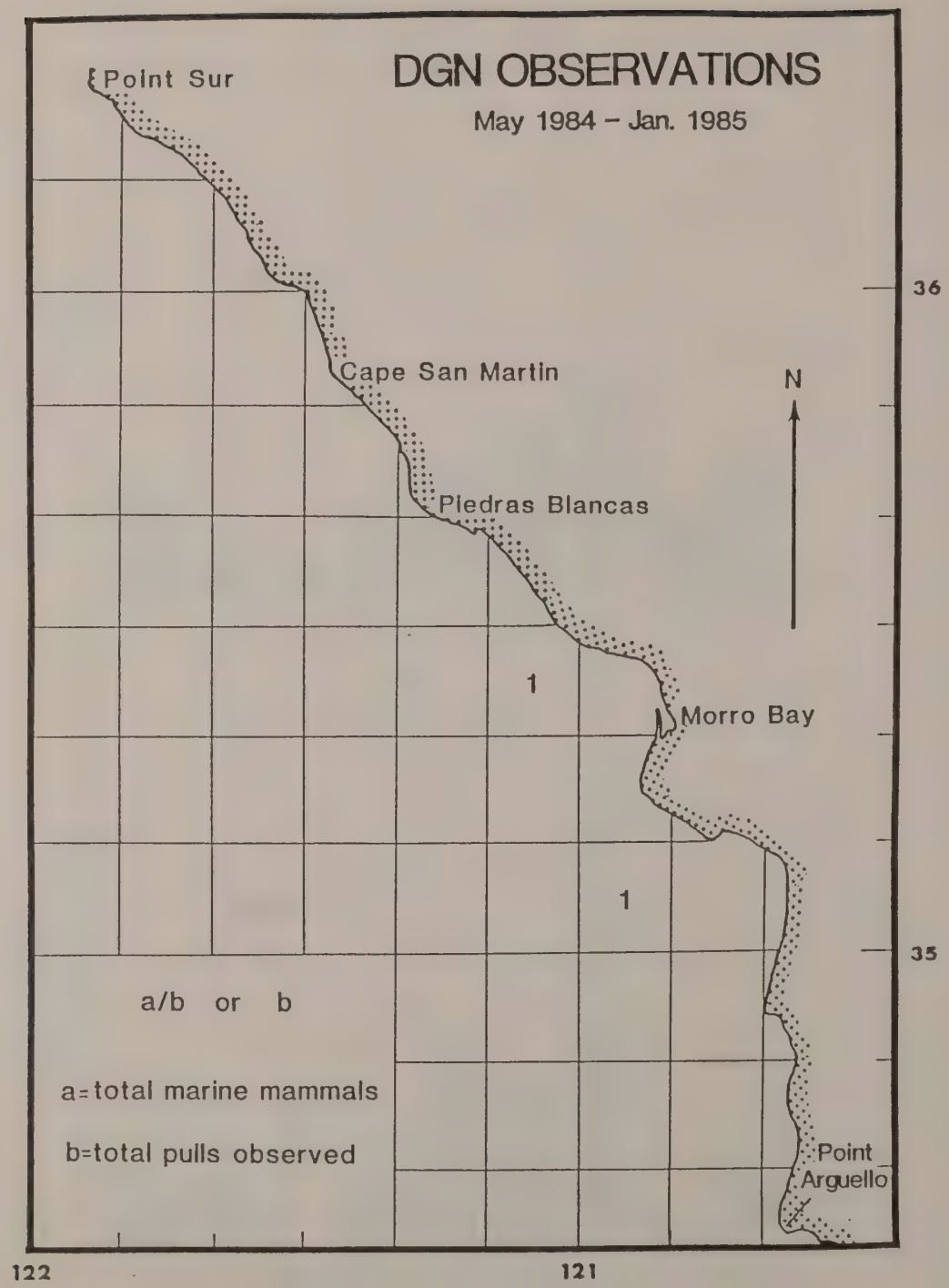


FIGURE 3. Locations of DGN observations in South-Central California (Morro Bay Area), May 1, 1984 - January 31, 1985.

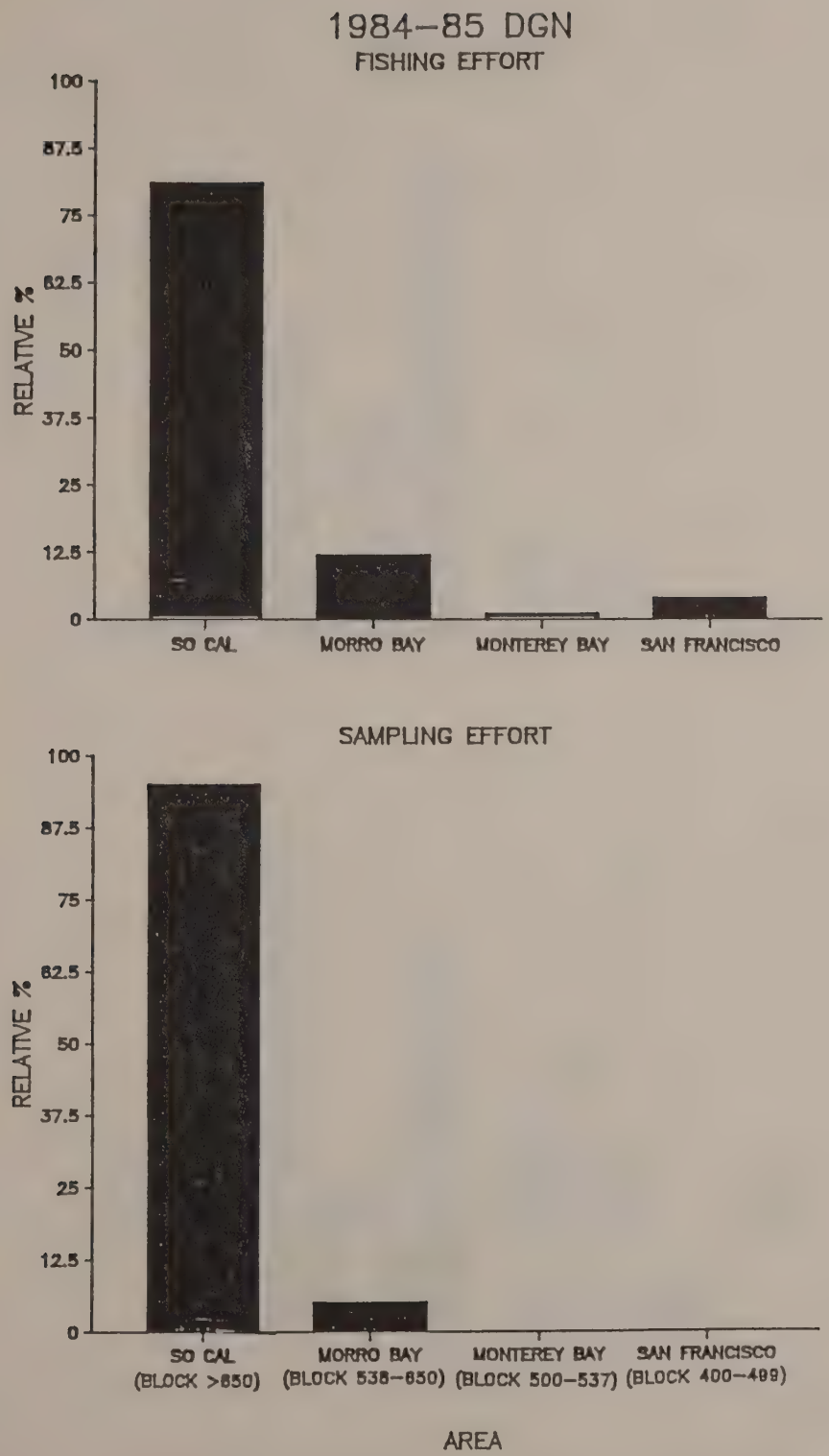


FIGURE 4. Relative percentages of fishing effort and sampling effort by area in the DGN fleet, May 1, 1984 - January 31, 1985. Areas are specified by Fish and Game block numbers (see Appendix IV).

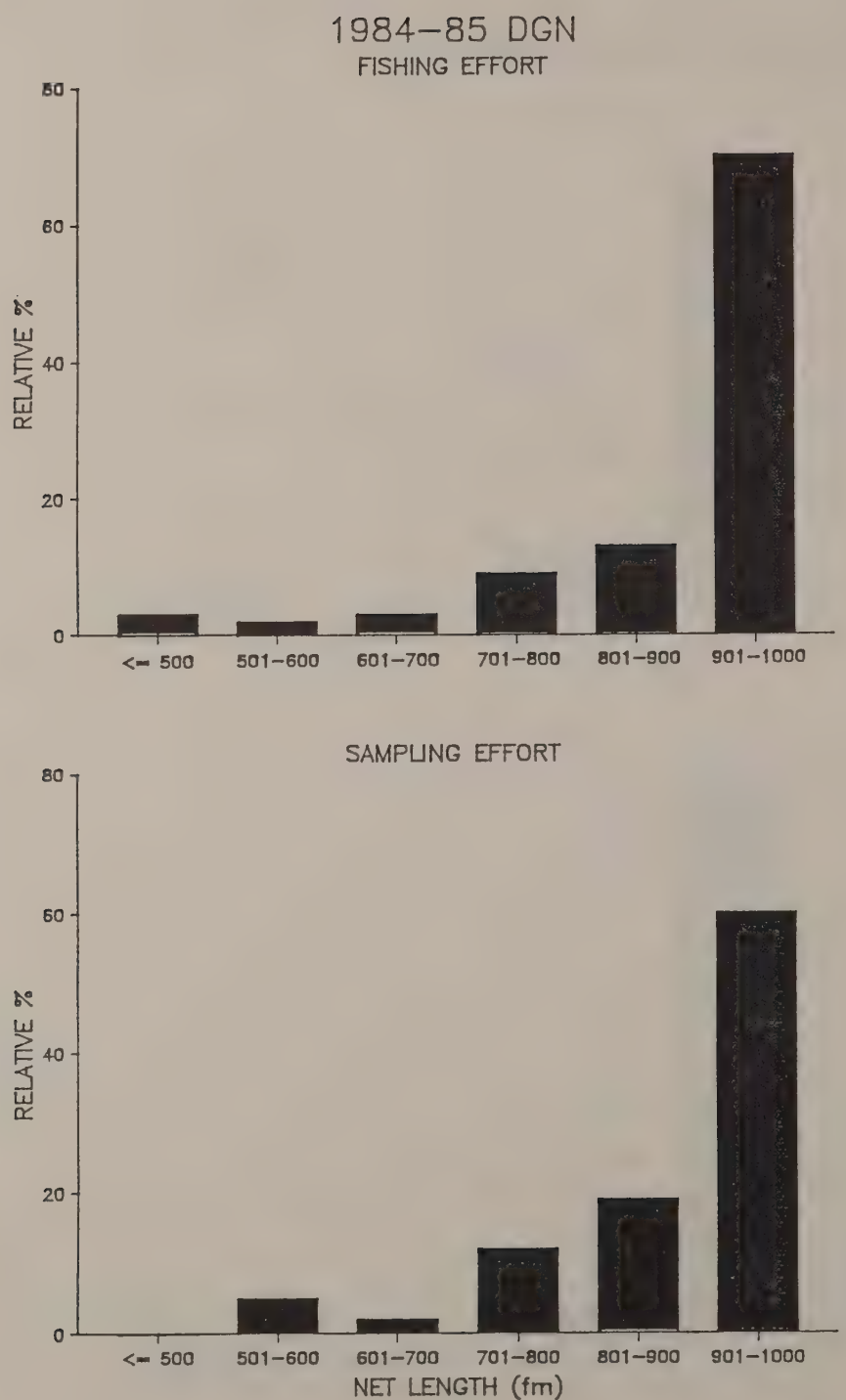


FIGURE 5. Relative percentages of fishing effort and sampling effort by net length in the DGN fleet, May 1, 1984 - January 31, 1985.

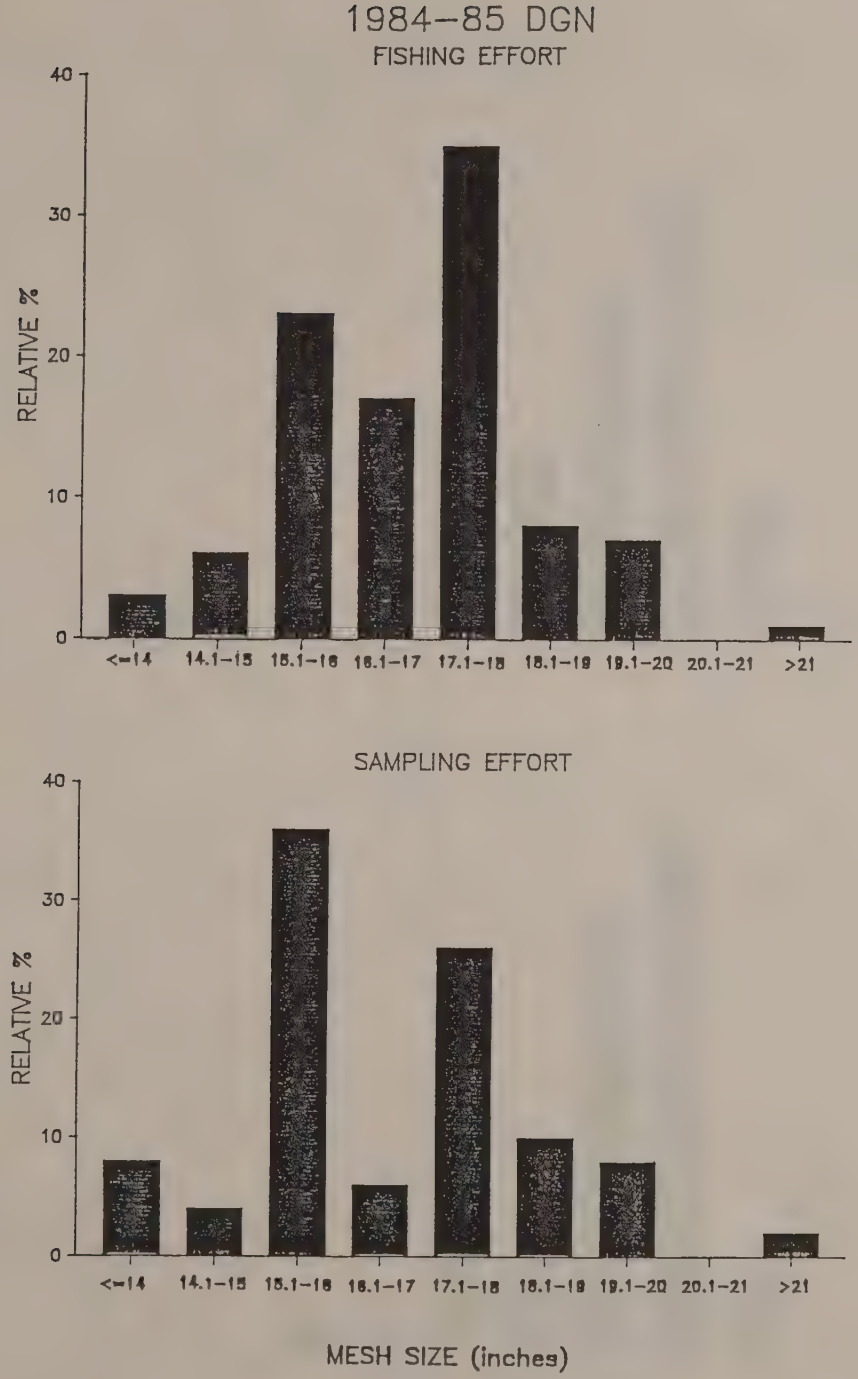


FIGURE 6. Relative percentages of fishing effort and sampling effort by stretched mesh size in the DGN fleet, May 1, 1984 - January 31, 1985.

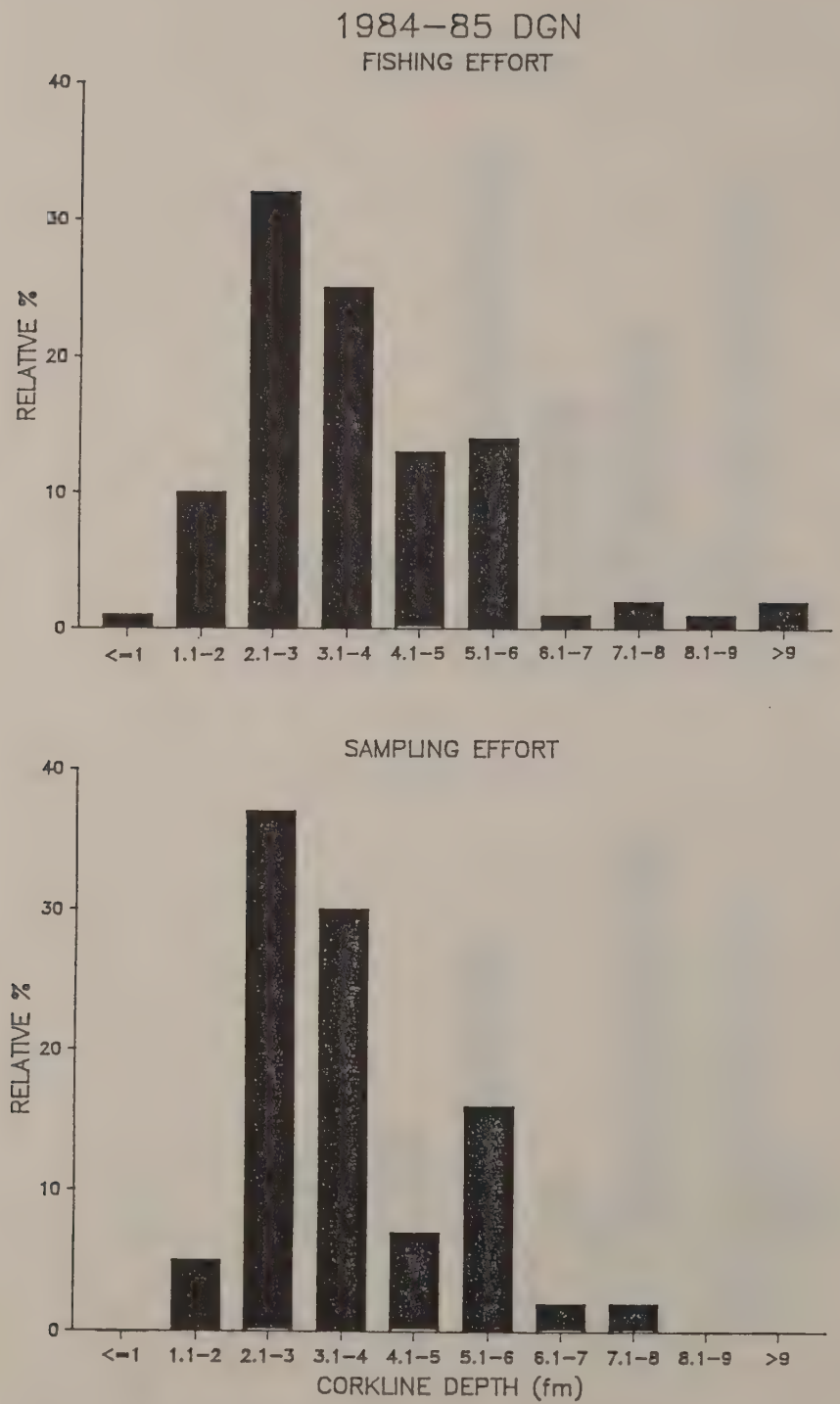


FIGURE 7. Relative percentages of fishing effort and sampling effort by corkline depth in the DGN fleet, May 1, 1984 - January 31, 1985.

APPENDIX I. Census results for the 1985 harbor seal survey along the California coast. (Date= date of count; Site= site number; Prob: C= camera, D= disturbance, F= fog; Time= time of count or photograph; Tide= tide height in meters; FA= count of adult seals from photograph; FP= count of pups from photograph; FT= total seals from photograph; GA= ground count of adult seals; GP= ground count of pups; GT= total seals from ground count; ET= higher total from FT or GT; Max= maximum count to date for a site.

DATE	SITE	PROB	TIME	TIDE (M)	FA	FP	FT	GA	GP	GT	ET	MAX
	000.1			0.00	0	0	0	0	0	0	0	7
	001.0			0.00	0	0	0	0	0	0	0	0
	002.0			0.00	0	0	0	0	0	0	0	0
5/29/85	003.0		1030	0.39	0	0	0	16	0	16	16	24
5/29/85	004.0		1018	0.18	51	0	51	70	2	72	72	96
5/28/85	005.0		1330	0.00	0	0	0	48	0	48	48	116
	006.0			0.00	0	0	0	0	0	0	0	26
5/28/85	007.0		1035	0.19	52	0	52	0	0	0	52	53
	008.0			0.00	0	0	0	0	0	0	0	10
5/28/85	009.0		1044	0.15	19	0	19	0	0	0	19	70
	010.0			0.00	0	0	0	0	0	0	0	205
5/30/85	011.0		1111	0.15	263	0	263	367	21	388	388	554
5/28/85	012.0		1113	0.15	30	0	30	0	0	0	30	38
	013.0			0.00	0	0	0	0	0	0	0	19
	013.1			0.00	0	0	0	0	0	0	0	2
	014.0			0.00	0	0	0	0	0	0	0	13
5/28/85	014.1		1124	0.12	12	1	13	0	0	0	13	31
5/28/85	015.0		1126	0.12	54	5	59	0	0	0	59	247
5/30/85	015.1		1126	0.12	34	1	35	215	13	228	228	228
5/29/85	015.2		1335	0.12	0	0	0	118	1	119	119	119
5/28/85	016.0		1127	0.12	75	3	78	0	0	0	78	78
	017.0			0.00	0	0	0	0	0	0	0	57
	018.0			0.00	0	0	0	0	0	0	0	127
5/28/85	019.0		1135	0.09	70	0	70	0	0	0	70	100
5/28/85	020.0		1138	0.09	33	0	33	0	0	0	33	38
5/28/85	021.0		1143	0.09	6	0	6	0	0	0	6	6
	021.1			0.00	0	0	0	0	0	0	0	10
	021.2			0.00	0	0	0	0	0	0	0	26
	021.3			0.00	0	0	0	0	0	0	0	2
5/28/85	022.0		1148	0.09	65	2	67	0	0	0	67	67
	023.0			0.00	0	0	0	0	0	0	0	1
5/28/85	023.1		1158	0.09	32	2	34	0	0	0	34	34
5/28/85	024.0		1158	0.09	5	0	5	0	0	0	5	58
5/28/85	025.0		1159	0.09	44	0	44	0	0	0	44	138
	026.0			0.00	0	0	0	0	0	0	0	51
	026.1			0.00	0	0	0	0	0	0	0	22
5/28/85	027.0		1201	0.09	19	0	19	0	0	0	19	29

DATE	SITE	PROB	TIME	TIDE (M)	FA	FP	FT	GA	GP	GT	ET	MAX
	028.0			0.00	0	0	0	0	0	0	0	20
	029.0			0.00	0	0	0	0	0	0	0	2
	030.0			0.00	0	0	0	0	0	0	0	2
	031.0			0.00	0	0	0	0	0	0	0	67
5/28/85	031.1		1209	0.09	12	0	12	0	0	0	12	12
	032.0			0.00	0	0	0	0	0	0	0	4
	033.0			0.00	0	0	0	0	0	0	0	14
	033.1			0.00	0	0	0	0	0	0	0	16
5/28/85	033.2		1212	0.09	28	0	28	0	0	0	28	28
	034.0			0.00	0	0	0	0	0	0	0	20
	034.1			0.00	0	0	0	0	0	0	0	38
5/28/85	035.0		1213	0.09	29	0	29	0	0	0	29	58
	035.1			0.00	0	0	0	0	0	0	0	3
5/28/85	036.0	C	1214	0.09	18	0	18	0	0	0	18	22
5/28/85	037.0		1214	0.09	14	1	15	0	0	0	15	61
	038.0			0.00	0	0	0	0	0	0	0	9
5/28/85	039.0		1215	0.09	54	1	55	0	0	0	55	132
	040.0			0.00	0	0	0	0	0	0	0	126
5/28/85	040.1		1216	0.09	1	0	1	0	0	0	1	1
	041.0			0.00	0	0	0	0	0	0	0	57
	041.1			0.00	0	0	0	0	0	0	0	49
5/28/85	042.0		1218	0.09	27	0	27	0	0	0	27	36
	042.1			0.00	0	0	0	0	0	0	0	12
5/28/85	043.0		1218	0.09	12	0	12	0	0	0	12	21
	043.1			0.00	0	0	0	0	0	0	0	1
	044.0			0.00	0	0	0	0	0	0	0	24
	045.0			0.00	0	0	0	0	0	0	0	22
5/29/85	046.0		1226	0.09	16	3	19	27	4	31	31	41
	046.1			0.00	0	0	0	0	0	0	0	1
	047.0			0.00	0	0	0	0	0	0	0	13
	048.0			0.00	0	0	0	0	0	0	0	22
5/28/85	049.0		1233	0.09	95	0	95	0	0	0	95	95
	050.0			0.00	0	0	0	0	0	0	0	86
	051.0			0.00	0	0	0	0	0	0	0	15
5/29/85	052.0		1430	0.00	0	0	0	87	13	100	100	100
5/29/85	053.0		1234	0.09	28	0	28	47	13	60	60	197
5/28/85	054.0		1234	0.09	60	3	63	0	0	0	63	65
	055.0			0.00	0	0	0	0	0	0	0	101
5/28/85	055.1		1234	0.09	12	0	12	0	0	0	12	30
5/28/85	056.0		1234	0.09	8	0	8	0	0	0	8	50
	056.1			0.00	0	0	0	0	0	0	0	39
5/28/85	056.2		1235	0.09	2	0	2	0	0	0	2	7
	057.0			0.00	0	0	0	0	0	0	0	46
5/28/85	057.1		1235	0.09	10	0	10	0	0	0	10	10
5/28/85	057.2		1237	0.09	14	0	14	0	0	0	14	14
	058.0			0.00	0	0	0	0	0	0	0	67
	058.1			0.00	0	0	0	0	0	0	0	51
5/28/85	059.0		1240	0.09	8	0	8	0	0	0	8	8
	060.0			0.00	0	0	0	0	0	0	0	11
5/28/85	061.0		1241	0.09	12	0	12	0	0	0	12	12

DATE	SITE	PROB	TIME	TIDE (M)	FA	FP	FT	GA	GP	GT	ET	MAX
	062.0			0.00	0	0	0	0	0	0	0	17
	063.0			0.00	0	0	0	0	0	0	0	19
	064.0			0.00	0	0	0	0	0	0	0	27
	065.0			0.00	0	0	0	0	0	0	0	43
	065.1			0.00	0	0	0	0	0	0	0	1
5/28/85	065.2		1241	0.09	2	0	2	0	0	0	2	28
	066.0			0.00	0	0	0	0	0	0	0	51
5/28/85	066.1		1243	0.09	8	1	9	0	0	0	9	10
	066.2			0.00	0	0	0	0	0	0	0	1
5/28/85	067.0	C	1243	0.09	0	0	0	0	0	0	3	26
	068.0			0.00	0	0	0	0	0	0	0	15
5/28/85	068.1		1245	0.09	15	0	15	0	0	0	15	15
	069.0			0.00	0	0	0	0	0	0	0	15
	069.1			0.00	0	0	0	0	0	0	0	15
	070.0			0.00	0	0	0	0	0	0	0	18
	070.1			0.00	0	0	0	0	0	0	0	8
5/28/85	071.0		1250	0.09	53	3	56	0	0	0	56	87
	071.1			0.00	0	0	0	0	0	0	0	2
5/28/85	072.0		1250	0.09	21	0	21	0	0	0	21	68
	073.0			0.00	0	0	0	0	0	0	0	13
5/28/85	073.1		1251	0.12	1	0	1	0	0	0	1	22
5/28/85	074.0		1253	0.12	33	2	35	41	4	45	45	68
5/28/85	075.0		1254	0.12	3	0	3	0	0	0	3	23
5/30/85	076.0		1256	0.12	55	0	55	55	3	58	58	90
	076.1			0.00	0	0	0	0	0	0	0	40
	077.0			0.00	0	0	0	0	0	0	0	17
	077.1			0.00	0	0	0	0	0	0	0	1
	078.0			0.00	0	0	0	0	0	0	0	104
	079.0			0.00	0	0	0	0	0	0	0	64
	080.0			0.00	0	0	0	0	0	0	0	33
5/28/85	080.1		1300	0.12	15	1	16	0	0	0	16	16
5/28/85	081.0		1300	0.12	5	3	8	0	0	0	8	18
5/28/85	081.1		1300	0.12	6	2	8	0	0	0	8	8
5/28/85	081.2		1301	0.12	20	0	20	0	0	0	20	20
5/28/85	081.3		1301	0.12	10	0	10	0	0	0	10	10
	082.0			0.00	0	0	0	0	0	0	0	70
	083.0			0.00	0	0	0	0	0	0	0	58
5/28/85	084.0		1307	0.12	10	1	11	0	0	0	11	11
5/28/85	085.0		1308	0.15	36	1	37	0	0	0	37	122
	086.0			0.00	0	0	0	0	0	0	0	68
5/28/85	087.0		1310	0.15	25	3	28	0	0	0	28	138
	087.1			0.00	0	0	0	0	0	0	0	0
	088.0			0.00	0	0	0	0	0	0	0	5
	089.0			0.00	0	0	0	0	0	0	0	20
	090.0			0.00	0	0	0	0	0	0	0	15
	091.0			0.00	0	0	0	0	0	0	0	1
	091.1			0.00	0	0	0	0	0	0	0	21
	092.0			0.00	0	0	0	0	0	0	0	12
	093.0			0.00	0	0	0	0	0	0	0	1
	093.1			0.00	0	0	0	0	0	0	0	9

DATE	SITE	PROB	TIME	TIDE (M)	FA	FP	FT	GA	GP	GT	ET	MAX
	094.0			0.00	0	0	0	0	0	0	0	2
5/28/85	094.1		1317	0.15	10	0	10	0	0	0	10	10
5/28/85	094.2		1317	0.15	4	0	4	0	0	0	4	4
5/28/85	094.3		1318	0.15	1	0	1	0	0	0	1	1
	095.0			0.00	0	0	0	0	0	0	0	15
	096.0			0.00	0	0	0	0	0	0	0	1
	096.1			0.00	0	0	0	0	0	0	0	14
5/28/85	096.2		1319	0.15	2	0	2	0	0	0	2	2
5/28/85	096.3		1319	0.15	1	0	1	0	0	0	1	1
5/28/85	096.4	C	1319	0.15	0	0	0	0	0	0	3	3
5/28/85	097.0		1319	0.15	15	0	15	0	0	0	15	22
	098.0			0.00	0	0	0	0	0	0	0	59
	099.0			0.00	0	0	0	0	0	0	0	5
5/28/85	099.1		1321	0.15	7	0	7	0	0	0	7	7
5/28/85	099.2		1321	0.15	3	0	3	0	0	0	3	3
	100.0			0.00	0	0	0	0	0	0	0	9
	101.0			0.00	0	0	0	0	0	0	0	14
	102.0			0.00	0	0	0	0	0	0	0	44
	103.0			0.00	0	0	0	0	0	0	0	1
	104.0			0.00	0	0	0	0	0	0	0	7
	105.0			0.00	0	0	0	0	0	0	0	6
	106.0			0.00	0	0	0	0	0	0	0	1
5/28/85	107.0		1330	0.18	8	0	8	0	0	0	8	34
	108.0			0.00	0	0	0	0	0	0	0	15
5/28/85	109.0		1331	0.18	10	0	10	0	0	0	10	10
5/30/85	110.0		1711	0.18	55	0	55	131	28	159	159	201
5/28/85	111.0	C	1333	0.18	6	0	6	0	0	0	6	15
	112.0			0.00	0	0	0	0	0	0	0	13
5/28/85	113.0		1335	0.18	37	0	37	0	0	0	37	37
	114.0			0.00	0	0	0	0	0	0	0	71
	114.1			0.00	0	0	0	0	0	0	0	3
	114.2			0.00	0	0	0	0	0	0	0	8
	115.0			0.00	0	0	0	0	0	0	0	46
5/28/85	116.0		1339	0.18	4	0	4	0	0	0	4	4
5/28/85	117.0		1336	0.18	9	0	9	0	0	0	11	29
	118.0			0.00	0	0	0	0	0	0	0	13
	119.0			0.00	0	0	0	0	0	0	0	3
5/28/85	119.1		1340	0.18	12	0	12	0	0	0	12	12
	120.0			0.00	0	0	0	0	0	0	0	2
	121.0			0.00	0	0	0	0	0	0	0	3
	122.0			0.00	0	0	0	0	0	0	0	18
	123.0			0.00	0	0	0	0	0	0	0	1
	124.0			0.00	0	0	0	0	0	0	0	1
	125.0			0.00	0	0	0	0	0	0	0	13
	126.0			0.00	0	0	0	0	0	0	0	11
5/28/85	127.0		1347	0.21	56	0	56	0	0	0	56	97
	128.0			0.00	0	0	0	0	0	0	0	1
5/28/85	129.0		1350	0.21	34	1	35	0	0	0	35	42
5/28/85	130.0		1357	0.21	110	0	110	0	0	0	110	266
	131.0			0.00	0	0	0	0	0	0	0	29

DATE	SITE	PROB	TIME	TIDE (M)	FA	FP	FT	GA	GP	GT	ET	MAX
	131.1			0.00	0	0	0	0	0	0	0	56
5/28/85	131.2		1358	0.24	1	0	1	0	0	0	1	3
	131.3			0.00	0	0	0	0	0	0	0	64
	132.0			0.00	0	0	0	0	0	0	0	32
5/28/85	133.0		1359	0.24	148	1	149	0	0	0	149	158
5/28/85	134.0	C	1404	0.27	12	0	12	0	0	0	12	12
5/28/85	134.1		1404	0.27	4	0	4	0	0	0	4	4
5/28/85	134.2		1405	0.27	10	0	10	0	0	0	10	10
	135.0			0.00	0	0	0	0	0	0	0	38
	136.0			0.00	0	0	0	0	0	0	0	10
	137.0			0.00	0	0	0	0	0	0	0	5
	137.1			0.00	0	0	0	0	0	0	0	2
5/28/85	138.0		1409	0.27	24	0	24	0	0	0	24	26
	139.0			0.00	0	0	0	0	0	0	0	14
	140.0			0.00	0	0	0	0	0	0	0	19
	140.1			0.00	0	0	0	0	0	0	0	1
	141.0			0.00	0	0	0	0	0	0	0	71
5/28/85	141.1		1413	0.27	2	0	2	0	0	0	2	3
	142.0			0.00	0	0	0	0	0	0	0	31
	143.0			0.00	0	0	0	0	0	0	0	2
	144.0	D	1415	0.00	0	0	0	0	0	0	0	28
	145.0			0.00	0	0	0	0	0	0	0	25
	146.0			0.00	0	0	0	0	0	0	0	18
	147.0			0.00	0	0	0	0	0	0	0	48
5/28/85	148.0		1417	0.27	33	0	33	0	0	0	33	36
	149.0			0.00	0	0	0	0	0	0	0	71
5/28/85	150.0		1418	0.30	47	5	52	0	0	0	52	96
5/28/85	151.0		1418	0.30	40	0	40	0	0	0	41	53
5/29/85	152.0		1245	0.30	0	0	0	35	7	42	42	42
	153.0			0.00	0	0	0	0	0	0	0	93
5/28/85	154.0		1420	0.30	20	0	20	0	0	0	20	58
	154.1			0.00	0	0	0	0	0	0	0	2
	155.0			0.00	0	0	0	0	0	0	0	45
5/28/85	155.1		1424	0.30	17	0	17	0	0	0	17	17
5/28/85	156.0	C	1424	0.30	0	0	0	0	0	0	2	63
	156.1			0.00	0	0	0	0	0	0	0	54
5/30/85	157.0		1425	0.30	84	0	84	86	16	102	102	155
5/28/85	158.0		1427	0.30	17	1	18	0	0	0	18	18
	159.0			0.00	0	0	0	0	0	0	0	6
	160.0			0.00	0	0	0	0	0	0	0	43
	160.1			0.00	0	0	0	0	0	0	0	9
5/28/85	161.0		1430	0.34	13	0	13	0	0	0	13	49
5/28/85	161.1	C	1430	0.34	9	0	9	0	0	0	9	9
5/28/85	161.2	C	1430	0.34	0	0	0	0	0	0	6	6
5/30/85	162.0		1431	0.34	33	0	33	96	5	101	101	149
	162.1			0.00	0	0	0	0	0	0	0	1
	163.0			0.00	0	0	0	0	0	0	0	7
5/29/85	164.0		1143	0.07	38	0	38	0	0	0	38	38
5/29/85	165.0		1153	0.24	48	0	48	68	0	68	68	68
5/29/85	166.0		1157	0.21	82	0	82	0	0	0	82	138

DATE	SITE	PROB	TIME	TIDE (M)	FA	FP	FT	GA	GP	GT	ET	MAX
5/29/85	167.0		1159	0.21	73	0	73	0	0	0	73	136
	168.0			0.00	0	0	0	0	0	0	0	29
5/29/85	169.0		1203	0.21	32	0	32	0	0	0	32	40
	170.0			0.00	0	0	0	0	0	0	0	1
	171.0			0.00	0	0	0	0	0	0	0	33
5/29/85	172.0		1207	0.21	51	14	65	0	0	0	65	120
5/29/85	173.0		1208	0.23	4	0	4	0	0	0	4	53
	174.0			0.00	0	0	0	0	0	0	0	80
5/29/85	175.0		1209	0.21	33	2	35	0	0	0	35	81
	176.0			0.00	0	0	0	0	0	0	0	31
	177.0			0.00	0	0	0	0	0	0	0	90
5/29/85	178.0		1215	0.15	77	15	92	0	0	0	92	92
5/29/85	179.0		1217	0.15	2	1	3	0	0	0	3	36
5/29/85	180.0		1220	0.15	17	4	21	0	0	0	21	44
	181.0			0.00	0	0	0	0	0	0	0	17
	182.0			0.00	0	0	0	0	0	0	0	3
5/29/85	182.1		1224	0.15	3	0	3	0	0	0	3	3
	183.0			0.00	0	0	0	0	0	0	0	4
	184.0			0.00	0	0	0	0	0	0	0	1
5/29/85	185.0		1226	0.15	9	3	12	0	0	0	12	19
	186.0			0.00	0	0	0	0	0	0	0	12
5/29/85	187.0		1227	0.15	8	0	8	0	0	0	8	8
5/29/85	188.0		1229	0.15	56	1	57	0	0	0	57	109
	189.0			0.00	0	0	0	0	0	0	0	11
	190.0			0.00	0	0	0	0	0	0	0	71
	191.0			0.00	0	0	0	0	0	0	0	21
	192.0			0.00	0	0	0	0	0	0	0	34
	193.0			0.00	0	0	0	0	0	0	0	24
5/29/85	193.1	C	1233	0.15	0	0	0	0	0	0	5	5
5/29/85	194.0		1234	0.15	41	0	41	0	0	0	41	45
	195.0			0.00	0	0	0	0	0	0	0	40
	195.1			0.00	0	0	0	0	0	0	0	20
5/29/85	196.0		1240	0.15	33	0	33	0	0	0	33	33
5/29/85	196.1		1241	0.15	19	0	19	0	0	0	19	19
5/29/85	197.0		1245	0.15	121	1	122	0	0	0	122	122
5/29/85	197.1		1246	0.15	100	0	100	0	0	0	100	100
	198.0			0.00	0	0	0	0	0	0	0	125
	199.0			0.00	0	0	0	0	0	0	0	45
	200.0			0.00	0	0	0	0	0	0	0	58
5/29/85	200.1		1249	0.15	22	1	23	0	0	0	24	24
	201.0			0.00	0	0	0	0	0	0	0	34
5/29/85	201.1		1252	0.15	3	0	3	0	0	0	3	3
5/29/85	202.0		1253	0.15	23	0	23	0	0	0	23	35
	202.1			0.00	0	0	0	0	0	0	0	0
5/29/85	203.0		1005	2.17	62	5	67	0	0	0	67	67
	204.0			0.00	0	0	0	0	0	0	0	14
5/29/85	205.0		1020	1.68	70	6	76	0	0	0	76	327
	206.0			0.00	0	0	0	0	0	0	0	7
5/29/85	207.0		1034	1.30	39	0	39	0	0	0	39	65
	208.0			0.00	0	0	0	0	0	0	0	17

DATE	SITE	PROB	TIME	TIDE (M)	FA	FP	FT	GA	GP	GT	ET	MAX
5/29/85	209.0		1312	0.03	53	0	53	0	0	0	53	58
	210.0			0.00	0	0	0	0	0	0	0	1
	211.0			0.00	0	0	0	0	0	0	0	30
	212.0			0.00	0	0	0	0	0	0	0	97
5/29/85	213.0		1306	0.03	95	4	99	0	0	0	99	99
	214.0			0.00	0	0	0	0	0	0	0	8
5/29/85	215.0		1422	0.18	11	0	11	0	0	0	13	34
	215.1			0.00	0	0	0	0	0	0	0	1
	216.0			0.00	0	0	0	0	0	0	0	5
5/29/85	217.0		1331-1429	0.09	52	2	54	0	0	0	54	143
	217.1			0.00	0	0	0	0	0	0	0	2
5/29/85	218.0		1333	0.18	185	0	185	0	0	0	185	185
5/29/85	218.1	D	1334	0.18	0	0	0	0	0	0	0	24
	219.0			0.00	0	0	0	0	0	0	0	19
5/29/85	219.1		1334	0.18	1	0	1	0	0	0	1	1
5/29/85	219.2		1335	0.18	1	0	1	0	0	0	1	1
5/29/85	219.3		1335	0.18	4	0	4	0	0	0	4	4
5/29/85	220.0		1341	0.18	49	0	49	0	0	0	49	93
5/30/85	221.0	C	1339	0.18	277	35	312	402	103	505	505	831
	222.0			0.00	0	0	0	0	0	0	0	11
5/29/85	223.0		1345	0.18	1	1	2	0	0	0	3	3
5/29/85	224.0		1350	0.18	169	31	200	0	0	0	200	509
5/29/85	225.0		1351	0.18	412	40	452	0	0	0	453	726
	226.0			0.00	0	0	0	0	0	0	0	66
	226.1			0.00	0	0	0	0	0	0	0	21
	226.2			0.00	0	0	0	0	0	0	0	72
	226.3			0.00	0	0	0	0	0	0	0	12
	227.0			0.00	0	0	0	0	0	0	0	34
	228.0			0.00	0	0	0	0	0	0	0	29
	229.0			0.00	0	0	0	0	0	0	0	0
5/29/85	230.0		1400	0.21	119	5	124	0	0	0	124	124
	231.0			0.00	0	0	0	0	0	0	0	101
	232.0			0.00	0	0	0	0	0	0	0	66
	232.1			0.00	0	0	0	0	0	0	0	11
	232.2			0.00	0	0	0	0	0	0	0	3
	233.0			0.00	0	0	0	0	0	0	0	31
	234.0			0.00	0	0	0	0	0	0	0	13
	235.0			0.00	0	0	0	0	0	0	0	17
	236.0			0.00	0	0	0	0	0	0	0	19
	237.0			0.00	0	0	0	0	0	0	0	1
5/29/85	238.0		1411	0.17	20	0	20	0	0	0	20	20
5/24/85	239.0		1413	0.00	24	0	24	0	0	0	24	24
	240.0			0.00	0	0	0	0	0	0	0	0
	240.1			0.00	0	0	0	0	0	0	0	3
	241.0			0.00	0	0	0	0	0	0	0	135
	242.0			0.00	0	0	0	0	0	0	0	2
	242.1			0.00	0	0	0	0	0	0	0	1
5/29/85	243.0		1414	0.17	29	0	29	0	0	0	29	53
5/29/85	244.0		1417	0.17	65	6	71	0	0	0	71	86
5/29/85	244.1		1417	0.17	1	0	1	0	0	0	1	1

DATE	SITE	PROB	TIME	TIDE (M)	FA	FP	FT	GA	GP	GT	ET	MAX
5/29/85	245.0		1418	0.17	355	15	370	0	0	0	370	419
5/29/85	246.0	C	1416	0.17	0	0	0	0	0	0	5	12
	247.0			0.00	0	0	0	0	0	0	0	5
5/29/85	248.0		1421	0.17	271	12	283	0	0	0	283	338
	248.1			0.00	0	0	0	0	0	0	0	72
5/29/85	249.0		1422	0.17	74	2	76	0	0	0	76	236
5/29/85	249.1	C	1433	0.31	0	0	0	0	0	0	1	1
	250.0			0.00	0	0	0	0	0	0	0	3
5/29/85	251.0		1435	0.31	70	1	71	0	0	0	71	115
	252.0			0.00	0	0	0	0	0	0	0	11
5/29/85	253.0	C	1437	0.31	0	0	0	0	0	0	1	11
	254.0			0.00	0	0	0	0	0	0	0	9
5/29/85	255.0		1441	0.31	16	2	18	0	0	0	18	18
	255.1			0.00	0	0	0	0	0	0	0	16
	256.0			0.00	0	0	0	0	0	0	0	8
5/29/85	257.0		1444	0.31	31	4	35	0	0	0	35	47
	258.0			0.00	0	0	0	0	0	0	0	2
	259.0			0.00	0	0	0	0	0	0	0	1
	260.0			0.00	0	0	0	0	0	0	0	2
	261.0			0.00	0	0	0	0	0	0	0	3
5/29/85	261.1		1450	0.37	7	0	7	0	0	0	7	10
	261.2			0.00	0	0	0	0	0	0	0	8
5/30/85	262.0		1247	0.43	166	0	166	120	68	188	188	190
	263.0			0.00	0	0	0	0	0	0	0	31
5/29/85	263.1		1453	0.37	18	3	21	0	0	0	21	21
5/29/85	263.2		1453	8.00	8	0	8	0	0	0	8	8
	264.0			0.00	0	0	0	0	0	0	0	26
	265.0			0.00	0	0	0	0	0	0	0	10
5/29/85	265.1		1456	0.37	5	0	5	0	0	0	5	5
	266.0			0.00	0	0	0	0	0	0	0	13
	267.0			0.00	0	0	0	0	0	0	0	5
5/30/85	268.0		1253	0.43	14	0	14	0	0	0	14	16
5/30/85	268.1		1256	0.40	4	0	4	0	0	0	4	4
	269.0			0.00	0	0	0	0	0	0	0	13
5/30/85	270.0		1258	0.40	1	0	1	0	0	0	1	9
	270.1			0.00	0	0	0	0	0	0	0	3
	270.2			0.00	0	0	0	0	0	0	0	1
5/29/85	271.0		1459	0.37	20	1	21	0	0	0	21	28
	272.0			0.00	0	0	0	0	0	0	0	14
	272.1			0.00	0	0	0	0	0	0	0	1
5/29/85	273.0		1501	0.43	4	0	4	0	0	0	4	70
	274.0			0.00	0	0	0	0	0	0	0	22
5/30/85	274.1		1310	0.37	17	0	17	0	0	0	17	17
	275.0			0.00	0	0	0	0	0	0	0	20
5/30/85	276.0		1311	0.37	21	0	21	0	0	0	21	21
5/30/85	277.0		1312	0.37	35	1	36	0	0	0	36	51
	277.1			0.00	0	0	0	0	0	0	0	3
	278.0			0.00	0	0	0	0	0	0	0	0
	279.0			0.00	0	0	0	0	0	0	0	1
	280.0			0.00	0	0	0	0	0	0	0	9

DATE	SITE	PROB	TIME	TIDE (M)	FA	FP	FT	GA	GP	GT	ET	MAX
5/30/85	281.0		1313	0.37	53	4	57	0	0	0	57	57
	282.0			0.00	0	0	0	0	0	0	0	50
5/30/85	282.1		1315	0.37	3	0	3	0	0	0	3	3
	283.0			0.00	0	0	0	0	0	0	0	10
	283.1			0.00	0	0	0	0	0	0	0	1
5/30/85	283.2		1317	0.37	7	3	10	0	0	0	10	10
5/30/85	284.0		1317	0.37	14	0	14	0	0	0	14	29
	284.1			0.00	0	0	0	0	0	0	0	5
	284.2			0.00	0	0	0	0	0	0	0	3
	284.3			0.00	0	0	0	0	0	0	0	1
	285.0			0.00	0	0	0	0	0	0	0	57
	285.1			0.00	0	0	0	0	0	0	0	16
5/30/85	285.2		1317	0.37	2	0	2	0	0	0	2	10
	286.0			0.00	0	0	0	0	0	0	0	0
5/30/85	287.0		1319	0.36	43	3	46	0	0	0	46	67
	287.1			0.00	0	0	0	0	0	0	0	3
	288.0			0.00	0	0	0	0	0	0	0	2
	289.0			0.00	0	0	0	0	0	0	0	10
5/30/85	290.0		1326	0.34	23	3	26	0	0	0	26	34
5/30/85	291.0	C	1327	0.34	0	0	0	0	0	0	3	9
	291.1			0.00	0	0	0	0	0	0	0	1
	292.0			0.00	0	0	0	0	0	0	0	1
	293.0			0.00	0	0	0	0	0	0	0	18
5/30/85	294.0		1331	0.34	26	0	26	0	0	0	26	26
	294.1			0.00	0	0	0	0	0	0	0	5
5/30/85	295.0		1331	0.34	18	2	20	0	0	0	20	40
5/30/85	296.0		1331	0.34	44	0	44	0	0	0	44	79
	297.0			0.00	0	0	0	0	0	0	0	4
	298.0			0.00	0	0	0	0	0	0	0	26
5/30/85	298.1		1334	0.34	12	1	13	0	0	0	13	23
5/30/85	298.2		1334	0.34	4	0	4	0	0	0	4	4
5/30/85	299.0		1336	0.34	19	2	21	0	0	0	21	36
5/30/85	299.1		1340	0.34	2	0	2	0	0	0	2	29
	300.0			0.00	0	0	0	0	0	0	0	1
	301.0			0.00	0	0	0	0	0	0	0	1
5/30/85	302.0		1341	0.34	66	4	70	0	0	0	70	125
	303.0			0.00	0	0	0	0	0	0	0	17
5/30/85	304.0		1342	0.34	16	2	18	0	0	0	18	39
5/30/85	305.0		1342	0.34	49	4	53	0	0	0	53	53
	306.0			0.00	0	0	0	0	0	0	0	1
5/30/85	307.0		1343	0.34	149	15	164	0	0	0	164	164
	308.0			0.00	0	0	0	0	0	0	0	72
	309.0			0.00	0	0	0	0	0	0	0	45
	310.0			0.00	0	0	0	0	0	0	0	3
5/30/85	310.1	C	1345	0.34	0	0	0	0	0	0	1	1
	311.0			0.00	0	0	0	0	0	0	0	10
	312.0			0.00	0	0	0	0	0	0	0	7
	312.1			0.00	0	0	0	0	0	0	0	27
5/30/85	313.0		1346	0.34	41	13	54	0	0	0	54	54
	314.0			0.00	0	0	0	0	0	0	0	4

DATE	SITE	PROB	TIME	TIDE (M)	FA	FP	FT	GA	GP	GT	ET	MAX
5/30/85	315.0		1348	0.34	45	3	48	0	0	0	48	48
5/30/85	315.1		1349	0.34	4	0	4	0	0	0	4	4
5/30/85	316.0		1351	0.31	32	2	34	0	0	0	35	35
	316.1			0.00	0	0	0	0	0	0	0	1
	317.0			0.00	0	0	0	0	0	0	0	13
5/30/85	317.1		1354	0.31	3	0	3	0	0	0	3	3
5/30/85	318.0		1352	0.31	18	1	19	0	0	0	19	19
	319.0			0.00	0	0	0	0	0	0	0	5
5/30/85	319.1	C	1355	0.31	3	0	3	0	0	0	4	4
	320.0			0.00	0	0	0	0	0	0	0	69
5/30/85	321.0		1357	0.31	13	1	14	0	0	0	14	14
	322.0			0.00	0	0	0	0	0	0	0	0
5/30/85	323.0		1400	0.31	28	0	28	0	0	0	28	28
5/30/85	324.0		1402	0.31	15	0	15	0	0	0	15	53
	324.1			0.00	0	0	0	0	0	0	0	2
	325.0			0.00	0	0	0	0	0	0	0	27
5/30/85	326.0		1407	0.31	72	2	74	0	0	0	74	86
	327.0			0.00	0	0	0	0	0	0	0	48
5/30/85	327.1		1413	0.31	23	1	24	0	0	0	24	24
5/30/85	328.0		1413	0.31	30	3	33	0	0	0	33	49
	329.0			0.00	0	0	0	0	0	0	0	2
5/30/85	330.0		1416	0.31	35	2	37	0	0	0	37	37
	331.0			0.00	0	0	0	0	0	0	0	1
5/30/85	332.0	C	1419	0.31	53	1	54	0	0	0	54	176
5/30/85	333.0		1421	0.31	41	2	43	0	0	0	43	60
5/30/85	334.0		1421	0.31	18	1	19	0	0	0	19	45
	335.0			0.00	0	0	0	0	0	0	0	36
5/30/85	335.1		1504	0.31	5	0	5	0	0	0	5	5
5/30/85	336.0		1424	0.31	3	0	3	0	0	0	3	19
	336.1			0.00	0	0	0	0	0	0	0	10
5/30/85	336.2		1424	0.31	1	0	1	0	0	0	1	1
5/30/85	337.0		1427	0.31	35	2	37	0	0	0	37	37
	337.1			0.00	0	0	0	0	0	0	0	2
5/30/85	338.0		1429	0.31	25	0	25	0	0	0	25	52
5/30/85	338.1		1429	0.31	1	0	1	0	0	0	1	1
	339.0			0.00	0	0	0	0	0	0	0	38
5/30/85	339.1		1430	0.31	17	0	17	0	0	0	17	17
	340.0			0.00	0	0	0	0	0	0	0	18
5/30/85	340.1	C	1430	0.31	0	0	0	0	0	0	1	14
5/30/85	341.0		1432	0.31	71	2	73	0	0	0	73	73
	342.0			0.00	0	0	0	0	0	0	0	32
5/30/85	342.1		1433	0.31	24	1	25	0	0	0	25	25
5/30/85	343.0		1434	0.31	22	2	24	0	0	0	24	31
5/30/85	343.1		1441	0.31	15	5	20	0	0	0	20	20
5/30/85	344.0	C	1437	0.31	21	1	22	0	0	0	22	22
	345.0			0.00	0	0	0	0	0	0	0	31
	346.0			0.00	0	0	0	0	0	0	0	41
	347.0			0.00	0	0	0	0	0	0	0	21
5/30/85	348.0		1446	0.34	33	0	33	0	0	0	33	33
5/30/85	349.0		1448	0.34	19	0	19	0	0	0	20	51

DATE	SITE	PROB	TIME	TIDE (M)	FA	FP	FT	GA	GP	GT	ET	MAX
5/30/85	349.1		1449	0.34	7	0	7	0	0	0	7	7
5/30/85	350.0		1450	0.34	22	3	25	0	0	0	25	27
	351.0			0.00	0	0	0	0	0	0	0	2
5/30/85	352.0		1453	0.34	107	13	120	61	0	61	120	183
	352.1			0.00	0	0	0	0	0	0	0	1
5/30/85	352.2		1457	0.34	17	3	20	0	0	0	20	20
5/30/85	353.0		1459	0.34	35	4	39	0	0	0	39	55
5/30/85	354.0		1501	0.34	29	1	30	0	0	0	30	44
5/30/85	355.0		1504	0.37	3	1	4	0	0	0	4	9
5/30/85	355.1	C	1504	0.37	0	0	0	0	0	0	4	4
	356.0			0.00	0	0	0	0	0	0	0	67
5/30/85	356.1		1509	0.37	40	0	40	0	0	0	40	100
5/30/85	357.0		1509	0.37	14	0	14	0	0	0	14	14
	358.0			0.00	0	0	0	0	0	0	0	25
5/30/85	359.0		1510	0.37	14	0	14	0	0	0	14	14
5/30/85	359.1		1514	0.37	1	0	1	0	0	0	1	1
	360.0			0.00	0	0	0	0	0	0	0	58
	361.0			0.00	0	0	0	0	0	0	0	186
	362.0			0.00	0	0	0	0	0	0	0	78
5/30/85	363.0		1518	0.37	460	0	460	0	0	0	460	839
	364.0			0.00	0	0	0	0	0	0	0	13
	365.0			0.00	0	0	0	0	0	0	0	52
5/30/85	366.0		1521	0.40	40	0	40	0	0	0	40	240
5/30/85	366.1		1526	0.40	1	0	1	0	0	0	1	86
5/30/85	367.0	C	1529	0.40	0	0	0	0	0	0	1	10
5/30/85	368.0	C	1530	0.40	0	0	0	0	0	0	1	43
5/30/85	368.1		1533	0.49	33	0	33	0	0	0	33	33
5/30/85	369.0		1539	0.49	13	0	13	0	0	0	13	13
5/30/85	369.1	C	1540	0.49	0	0	0	0	0	0	1	1
5/30/85	370.0	C	1543	0.49	0	0	0	0	0	0	3	3
	371.0			0.00	0	0	0	0	0	0	0	25
	372.0			0.00	0	0	0	0	0	0	0	3
5/30/85	373.0		1547	0.49	132	27	159	0	0	0	159	172
5/30/85	373.1		1551	0.49	20	6	26	0	0	0	26	34
5/30/85	374.0		1552	0.49	28	0	28	0	0	0	32	76
	375.0			0.00	0	0	0	0	0	0	0	10
	376.0			0.00	0	0	0	0	0	0	0	1
	377.0			0.00	0	0	0	0	0	0	0	4
5/30/85	378.0		1558	0.46	1	1	2	0	0	0	2	5
	378.1			0.00	0	0	0	0	0	0	0	2
	379.0			0.00	0	0	0	0	0	0	0	3
	380.0			0.00	0	0	0	0	0	0	0	15
5/30/85	380.1		1600	0.46	4	0	4	0	0	0	4	4
5/30/85	381.0		1602	0.46	41	1	42	0	0	0	42	46
5/30/85	381.1		1612	0.58	426	15	441	0	0	0	441	441
	381.2			0.00	0	0	0	0	0	0	0	81
5/30/85	381.3		1602	0.46	14	1	15	0	0	0	15	15
	382.0			0.00	0	0	0	0	0	0	0	483
5/30/85	383.0		1618	0.55	375	50	425	0	0	0	426	492
5/30/85	384.0		1636	0.09	5	0	5	0	0	0	5	518

DATE	SITE	PROB	TIME	TIDE (M)	FA	FP	FT	GA	GP	GT	ET	MAX
5/30/85	385.0		1641	0.09	135	13	148	0	0	0	148	170
	386.0			0.00	0	0	0	0	0	0	0	9
5/30/85	386.1		1655	0.79	1	0	1	0	0	0	1	1
	387.0			0.00	0	0	0	0	0	0	0	17
	388.0			0.00	0	0	0	0	0	0	0	39
	389.0			0.00	0	0	0	0	0	0	0	31
5/30/85	390.0		1656	0.79	20	4	24	0	0	0	24	79
5/30/85	390.1		1659	0.79	14	0	14	0	0	0	14	14
	391.0			0.00	0	0	0	0	0	0	0	43
	392.0			0.00	0	0	0	0	0	0	0	19
5/31/85	393.0		1510	0.64	35	5	40	0	0	0	40	93
5/30/85	394.0		1701	0.88	4	3	7	0	0	0	7	22
5/30/85	395.0		1701	0.88	21	0	21	21	2	23	23	32
5/30/85	396.0		1702	0.88	11	0	11	0	0	0	11	23
5/31/85	396.1		1514	0.61	13	3	16	0	0	0	16	16
5/30/85	397.0		1705	0.88	5	2	7	0	0	0	7	12
5/31/85	398.0		1620	0.00	0	0	0	41	2	43	43	43
5/31/85	399.0		1519	0.61	36	0	36	67	0	67	67	69
	400.0			0.00	0	0	0	0	0	0	0	67
5/30/85	401.0		1530	0.61	0	0	0	6	0	6	6	24
	402.0			0.00	0	0	0	0	0	0	0	15
5/31/85	403.0		1530	0.61	0	0	0	3	0	3	3	27
5/31/85	404.0		1519	0.61	12	1	13	3	0	3	13	79
5/31/85	405.0		1720	0.61	0	0	0	13	1	14	14	30
	406.0			0.00	0	0	0	0	0	0	0	55
	407.0			0.00	0	0	0	0	0	0	0	9
	408.0			0.00	0	0	0	0	0	0	0	10
5/31/85	409.0		1535	0.59	20	0	20	0	0	0	20	341
5/31/85	410.0		1537	0.58	27	1	28	0	0	0	28	48
	411.0			0.00	0	0	0	0	0	0	0	20
	412.0			0.00	0	0	0	0	0	0	0	56
5/31/85	413.0		1539	0.58	96	0	96	0	0	0	96	96
	413.1			0.00	0	0	0	0	0	0	0	1
5/31/85	414.0		1546	0.58	379	0	379	0	0	0	379	379
	415.0			0.00	0	0	0	0	0	0	0	100
5/31/85	416.0		1546	0.58	7	1	8	0	0	0	8	61
	417.0			0.00	0	0	0	0	0	0	0	3
5/31/85	418.0		1553	0.58	328	0	328	0	0	0	328	542
5/31/85	419.0	C	1556	0.58	0	0	0	0	0	0	1	3
5/31/85	420.0		1603	0.58	10	0	10	0	0	0	10	10
	421.0			0.00	0	0	0	0	0	0	0	9
5/29/85	422.0		1350	0.70	0	0	0	32	0	32	32	84

APPENDIX II. Harbor seal counts by site and census. (82R = April 1982, 83R = April 1983, 82 = May-June 1982, 83 = June 1983, 84 = June 1984, 85 = May-June 1985). Rookery sites are underlined.

SITE	82R	83R	82	83	84	85
0.1					7	0
1.0	0	0	0	0	0	0
2.0	0	0	0	0	0	0
3.0	19	24	6	13	9	16
4.0	43	67	85	95	94	72
5.0	0	93	0	0	5	48
6.0	8	13	0	0	22	0
7.0	14	23	53	0	0	52
8.0	0	0	0	0	0	0
9.0	0	0	0	0	0	19
10.0	12	0	0	205	29	0
11.0	242	223	387	554	375	388
12.0	3	4	38	0	18	30
13.0	19	0	9	0	0	0
13.1		2		0	0	0
14.0	0	0	0	13	0	0
14.1				31	0	13
15.0	0	143	24	247	0	59
15.1						228
15.2						119
16.0	0	0	0	49	71	78
17.0	0	23	41	0	0	0
18.0	17	0	18	0	0	0
19.0	70	21	0	94	100	70
20.0	2	0	18	0	0	33
21.0	0	0	0	4	0	6
21.1				10	0	0
21.2					26	0
21.3					2	0
22.0	60	18	46	51	62	67
23.0	0	0	0	0	0	0
23.1				2	0	34
24.0	19	0	0	58	0	5
25.0	81	39	138	0	30	44
26.0	51	0	0	0	0	0
26.1	0	22	0	0	0	0
27.0	22	0	29	0	0	19
28.0	0	0	0	0	0	0
29.0	0	2	0	0	0	0
30.0	0	0	0	0	0	0
31.0	40	0	67	0	0	0
31.1						12
32.0	0	0	1	0	0	0
33.0	13	14	0	0	0	0
33.1		16		0	0	0
33.2						28
34.0	11	3	0	0	20	0
34.1					38	0
35.0	20	14	58	20	2	29
35.1		3		0	0	0
36.0	0	0	22	13	15	18
37.0	16	0	60	0	61	15
38.0	9	0	0	0	0	0
39.0	29	0	132	66	124	55
40.0	0	0	0	0	0	0
40.1						1
41.0	23	5	7	5	21	0
41.1					49	0
42.0	17	12	9	36	0	27
42.1				12	0	0
43.0	0	0	21	0	0	12
43.1		1		0	0	0
44.0	24	12	0	0	0	0
45.0	1	22	0	0	0	0
46.0	41	37	29	41	33	31
46.1		1		0	0	0
47.0	1	0	0	0	0	0
48.0	19	0	0	0	0	0
49.0	15	0	0	10	0	95
50.0	86	0	53	0	0	0
51.0	15	0	0	0	0	0
52.0	23	0	24	0	0	100
53.0	90	80	197	27	13	60
54.0	0	0	49	43	0	63
55.0	0	29	35	101	0	0
55.1					30	12
56.0	30	50	0	0	0	8
56.1		39		12	0	0
56.2		7		0	0	2
57.0	46	0	0	2	0	0
57.1						10
57.2						14
58.0	0	0	0	18	15	0
58.1				51	0	0
59.0	3	0	0	0	0	8
60.0	10	11	0	0	0	0
61.0	0	0	4	0	12	12
62.0	0	0	17	0	0	0
63.0	8	0	19	0	0	0
64.0	27	11	0	9	0	0
65.0	32	8	42	43	0	0
65.1		1		0	0	0
65.2					28	2
66.0	17	14	0	51	15	0
66.1		10		8	0	9
66.2		1			0	0

SITE	82R	83R	82	83	84	85
67.0	8	0	0	0	0	3
68.0	0	0	0	0	14	0
68.1						15
69.0	9	0	15	0	0	0
69.1					15	0
70.0	18	10	11	0	0	0
70.1				8	0	0
71.0	23	0	8	87	28	56
71.1					2	0
72.0	68	0	23	0	0	21
73.0	8	13	0	0	0	0
73.1	0	5	0	0	0	1
74.0	33	33	50	48	33	45
75.0	17	7	0	23	20	3
76.0	71	48	0	90	25	58
76.1					40	0
77.0	5	0	0	17	0	0
77.1				1	0	0
78.0	54	13	41	0	0	0
79.0	45	0	48	34	30	0
80.0	12	0	33	0	0	0
80.1						16
81.0	0	0	0	0	0	8
81.1						8
81.2						20
81.3						10
82.0	0	0	0	0	13	0
83.0	0	0	0	3	0	0
84.0	0	0	0	0	0	11
85.0	67	14	122	64	77	37
86.0	25	26	18	4	0	0
87.0	80	0	138	101	121	28
87.1	0	0	0	0	0	0
88.0	0	0	0	0	0	0
89.0	0	0	0	0	0	0
90.0	0	0	0	0	0	0
91.0	0	0	0	0	0	0
91.1	0			21	0	0
92.0	0	0	0	0	0	0
93.0	0	0	1	0	0	0
93.1					9	0
94.0	0	0	2	0	0	0
94.1						10
94.2						4
94.3						1
95.0	1	0	7	0	15	0
96.0	0	0	1	0	0	0
96.1					14	0
96.2						2
96.3						1
96.4						3
97.0	22	0	1	0	10	15
98.0	24	0	59	10	0	0

SITE	82R	83R	82	83	84	85
99.0	0	0	0	0	0	0
99.1						7
99.2						3
100.0	0	0	9	0	0	0
101.0	14	0	9	9	0	0
102.0	20	0	44	4	0	0
103.0	0	0	1	0	0	0
104.0	0	0	7	0	0	0
105.0	0	0	6	0	0	0
106.0	0	0	1	0	0	0
107.0	29	0	34	18	0	8
108.0	0	0	15	0	0	0
109.0	4	0	0	0	0	10
110.0	128	150	125	79	82	159
111.0	0	0	13	10	15	6
112.0	13	0	7	0	0	0
113.0	0	0	0	0	0	37
114.0	0	0	27	0	0	0
114.1		3		0	1	0
114.2		8		0	0	0
115.0	0	0	0	0	0	0
116.0	0	0	0	0	0	4
117.0	0	0	29	13	4	11
118.0	7	0	10	0	0	0
119.0	0	0	0	0	0	0
119.1						12
120.0	2	0	0	0	0	0
121.0	2	0	3	0	0	0
122.0	0	2	18	0	0	0
123.0	0	0	1	0	0	0
124.0	0	0	1	0	0	0
125.0	13	0	7	5	0	0
126.0	0	0	11	0	0	0
127.0	71	17	97	43	87	56
128.0	0	0	0	0	0	0
129.0	4	0	39	0	20	35
130.0	266	106	190	159	64	110
131.0	29	18	0	0	0	0
131.1		56		0	0	0
131.2		3		0	0	1
131.3					64	0
132.0	32	0	0	15	0	0
133.0	61	0	158	0	19	149
134.0	6	0	0	0	0	12
134.1						4
134.2						10
135.0	38	0	12	0	0	0
136.0	5	0	10	0	0	0
137.0	5	0	0	0	0	0
137.1				2	0	0
138.0	0	0	26	14	20	24
139.0	0	0	14	12	0	0
140.0	0	0	12	0	0	0

SITE	82R	83R	82	83	84	85
140.1		1		0	0	0
141.0	22	0	71	24	23	0
141.1		3		0	0	2
142.0	11	0	22	0	3	0
143.0	0	0	2	0	0	0
144.0	28	0	19	0	11	0
145.0	25	0	24	7	0	0
146.0	0	0	0	17	18	0
147.0	0	0	32	0	0	0
148.0	10	0	25	0	12	33
149.0	36	51	71	24	1	0
150.0	51	56	96	58	64	52
151.0	36	14	53	8	23	41
152.0	29	20	41	0	39	42
153.0	28	13	6	13	5	0
154.0	0	0	18	0	19	20
154.1					2	0
155.0	0	7	29	27	1	0
155.1						17
156.0	14	31	47	0	9	2
156.1	0	14	0	54	0	0
157.0	145	129	145	120	98	102
158.0	2	0	0	0	1	18
159.0	6	0	0	0	0	0
160.0	30	21	23	43	8	0
160.1		2		0	1	0
161.0	7	21	49	0	22	13
161.1						9
161.2						6
162.0	100	76	133	108	85	101
162.1		1		0	0	0
163.0	0	0	0	7	0	0
164.0	0	5	17	34	35	38
165.0	33	0	28	34	8	68
166.0	41	36	138	0	49	82
167.0	0	58	28	45	136	73
168.0	0	0	1	0	0	0
169.0	39	31	37	40	31	32
170.0	0	0	1	0	0	0
171.0	0	33	8	3	0	0
172.0	0	19	120	83	63	65
173.0	23	53	12	0	0	4
174.0	80	0	23	0	18	0
175.0	76	46	53	26	0	35
176.0	25	31	3	1	20	0
177.0	60	5	71	16	90	0
178.0	43	43	83	74	10	92
179.0	0	0	36	0	0	3
180.0	21	20	44	22	0	21
181.0	7	17	0	0	0	0
182.0	0	0	3	0	0	0
182.1						3
183.0	0	4	1	0	0	0

SITE	82R	83R	82	83	84	85
184.0	0	1	1	0	0	0
185.0	0	1	3	0	19	12
186.0	12	0	9	0	0	0
187.0	4	2	0	0	1	8
188.0	50	39	70	95	109	57
189.0	0	0	0	0	0	0
190.0	43	0	23	53	71	0
191.0	0	0	0	0	0	0
192.0	9	29	10	20	0	0
193.0	0	24	0	0	0	0
193.1						5
194.0	20	33	45	29	6	41
195.0	0	26	34	40	12	0
195.1		20		0	0	0
196.0	0	0	7	0	21	33
196.1						19
197.0	57	11	104	84	38	122
197.1		80		0	0	100
198.0	23	36	118	0	125	0
199.0	0	25	0	45	0	0
200.0	0	0	7	58	0	0
200.1						24
201.0	30	34	0	5	0	0
201.1						3
202.0	0	11	25	35	11	23
202.1					0	0
203.0	0	0	0	0	1	67
204.0	0	13	0	1	0	0
205.0	283	154	197	125	311	76
206.0	0	0	0	7	0	0
207.0	0	8	60	17	40	39
208.0	0	0	7	0	0	0
209.0	0	8	0	58	47	53
210.0	0	0	0	0	0	0
211.0	0	0	0	0	0	0
212.0	0	0	0	0	0	0
213.0	40	71	85	85	64	99
214.0	0	0	8	3	0	0
215.0	12	5	10	3	20	13
215.1					1	0
216.0	0	0	1	0	5	0
217.0	36	61	88	103	143	54
217.1					2	0
218.0	115	101	112	118	7	185
218.1		24		0	0	0
219.0	5	19	4	19	8	0
219.1						1
219.2						1
219.3						4
220.0	0	32	88	30	47	49
221.0	465	634	566	583	831	505
222.0	11	0	0	0	0	0
223.0	0	0	0	0	0	3

SITE	82R	83R	82	83	84	85
224.0	0	0	509	86	508	200
225.0	543	400	516	214	172	453
226.0	10	0	0	66	0	0
226.1				21	0	0
226.2				72	0	0
226.3				12	0	0
227.0	0	0	34	0	0	0
228.0	29	0	0	0	0	0
229.0	0	0	0	0	0	0
230.0	7	0	1	0	0	124
231.0	38	73	101	0	0	0
232.0	3	64	64	0	66	0
232.1					11	0
232.2					3	0
233.0	24	0	31	0	3	0
234.0	13	0	0	0	0	0
235.0	17	0	0	0	0	0
236.0	19	11	1	0	0	0
237.0	0	0	0	0	0	0
238.0	12	0	4	0	0	20
239.0	0	0	1	0	0	24
240.0	0	0	0	0	0	0
240.1		3		0	0	0
241.0	122	28	86	105	135	0
242.0	2	0	1	0	0	0
242.1		1		0	0	0
243.0	53	0	53	30	0	29
244.0	59	41	86	20	39	71
244.1					1	1
245.0	165	37	256	247	142	370
246.0	0	0	12	0	8	5
247.0	5	3	0	0	0	0
248.0	338	289	196	215	0	283
248.1					72	0
249.0	27	31	136	44	47	76
249.1						1
250.0	3	0	1	0	0	0
251.0	106	36	115	0	99	71
252.0	0	0	0	0	0	0
253.0	0	0	11	0	0	1
254.0	9	0	1	0	0	0
255.0	0	0	8	0	0	18
255.1					16	0
256.0	0	0	8	0	0	0
257.0	29	16	47	13	38	35
258.0	2	0	0	0	0	0
259.0	0	0	0	0	0	0
260.0	2	0	0	0	0	0
261.0	0	0	0	0	0	0
261.1		10		0	0	7
261.2		8		6	0	0
262.0	119	183	127	140	93	188
263.0	31	0	0	0	0	0

SITE	82R	83R	82	83	84	85
263.1						21
263.2						8
264.0	2	0	0	0	26	0
265.0	0	0	0	0	1	0
265.1						5
266.0	2	0	8	0	0	0
267.0	5	0	0	0	3	0
268.0	8	16	0	0	5	14
268.1				2	0	4
269.0	12	0	13	0	0	0
270.0	0	0	0	0	0	1
270.1		3		0	0	0
270.2		1		0	0	0
271.0	28	0	8	0	10	21
272.0	1	0	12	6	14	0
272.1					1	0
273.0	70	34	49	24	6	4
274.0	13	22	18	0	3	0
274.1		1		0	3	17
275.0	0	0	20	17	10	0
276.0	3	0	0	0	0	21
277.0	27	0	51	0	15	36
277.1		3		0	0	0
278.0	0	0	0	0	0	0
279.0	0	0	1	0	0	0
280.0	9	3	0	0	0	0
281.0	0	0	21	0	15	57
282.0	11	31	0	50	48	0
282.1						3
283.0	10	0	0	0	0	0
283.1					1	0
283.2						10
284.0	24	14	29	0	0	14
284.1				5	0	0
284.2					3	0
284.3					1	0
285.0	0	0	0	0	0	0
285.1					16	0
285.2					10	2
286.0	0	0	0	0	0	0
287.0	4	24	64	39	67	46
287.1		3		0	0	0
288.0	0	0	2	0	0	0
289.0	10	2	9	0	0	0
290.0	31	34	0	27	0	26
291.0	0	0	1	0	9	3
291.1					1	0
292.0	1	0	0	0	0	0
293.0	18	0	0	0	0	0
294.0	0	21	4	0	8	26
294.1					5	0
295.0	0	0	40	0	0	20
296.0	35	30	52	34	79	44

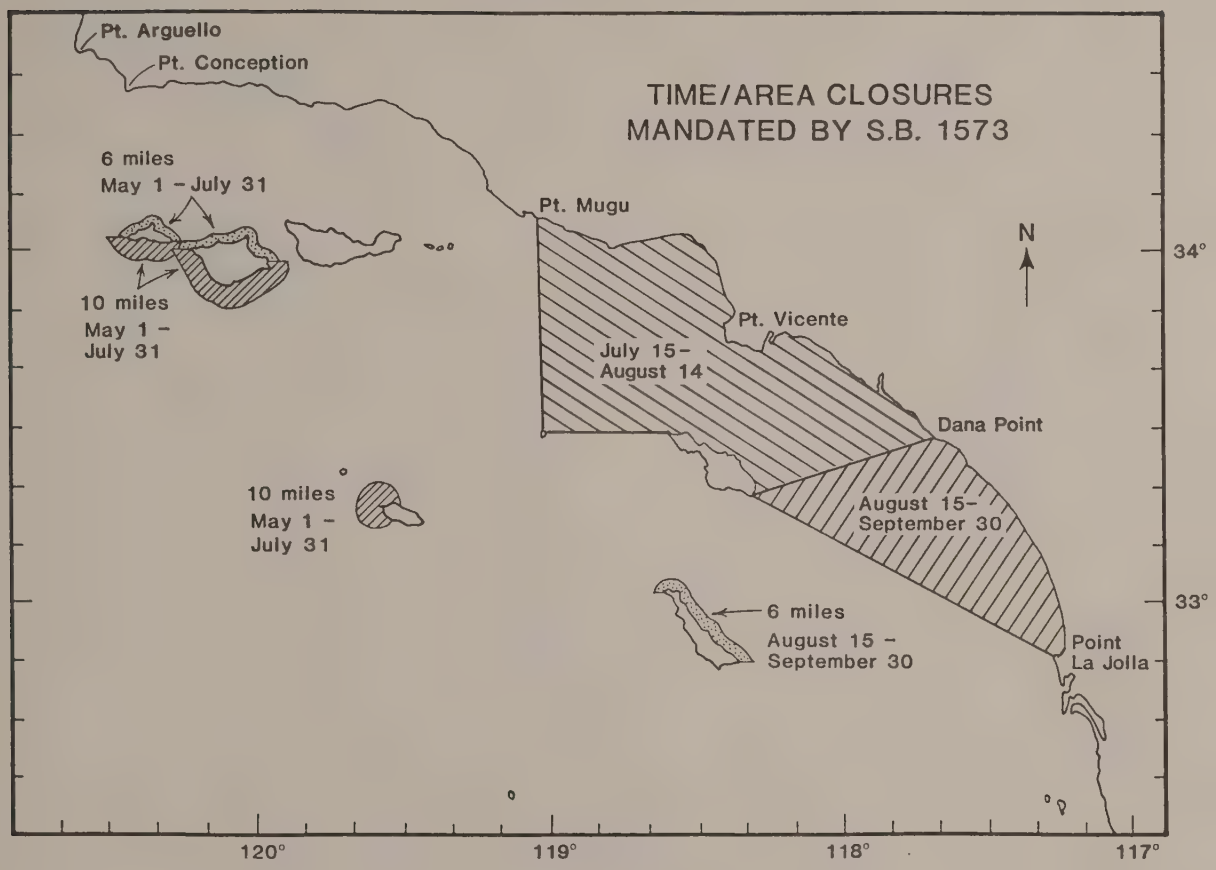
SITE	82R	83R	82	83	84	85
297.0	0	0	2	0	0	0
297.1		3		2	35	0
298.0	26	1	0	0	0	0
298.1		23		14	0	13
298.2						4
299.0	10	9	25	0	36	21
299.1					29	2
300.0	0	0	1	0	0	0
301.0	1	0	0	0	0	0
302.0	87	55	125	74	67	70
303.0	10	17	4	2	13	0
304.0	26	18	39	0	0	18
305.0	29	6	45	0	0	53
306.0	0	0	1	0	0	0
307.0	131	73	109	46	51	164
308.0	0	0	0	0	72	0
309.0	18	37	0	44	45	0
310.0	3	0	0	0	0	0
310.1						1
311.0	8	10	0	0	6	0
312.0	6	5	0	0	7	0
312.1					27	0
313.0	27	17	0	15	0	54
314.0	4	0	0	0	0	0
315.0	39	31	0	25	33	48
315.1						4
316.0	27	2	0	0	0	35
316.1		1		0	0	0
317.0	13	0	0	0	0	0
317.1						3
318.0	6	14	15	15	19	19
319.0	5	2	0	0	0	0
319.1						4
320.0	42	40	57	49	69	0
321.0	0	4	4	0	0	14
322.0	0	0	0	0	0	0
323.0	25	0	17	0	0	28
324.0	36	53	0	0	14	15
324.1					2	0
325.0	0	0	0	27	2	0
326.0	63	48	84	46	86	74
327.0	33	48	0	28	0	0
327.1						24
328.0	20	0	0	27	49	33
329.0	2	0	0	0	1	0
330.0	25	16	32	21	0	37
331.0	0	0	0	0	1	0
332.0	33	83	176	89	76	54
333.0	35	0	33	0	60	43
334.0	19	0	45	33	36	19
335.0	0	36	4	0	0	0
335.1						5
336.0	12	6	12	12	19	3

SITE	82R	83R	82	83	84	85
336.1		10		0	0	0
336.2						1
337.0	33	13	0	25	24	37
337.1		2		0	0	0
338.0	9	43	48	52	48	25
338.1						1
339.0	28	11	38	22	7	0
339.1						17
340.0	0	0	0	8	18	0
340.1					14	1
341.0	36	66	49	50	69	73
342.0	29	23	32	0	0	0
342.1				7	0	25
343.0	11	31	27	0	2	24
343.1						20
344.0	17	19	18	15	20	22
345.0	0	0	31	0	0	0
346.0	0	41	0	26	18	0
347.0	0	21	0	13	0	0
348.0	0	27	0	31	28	33
349.0	44	28	51	26	24	20
349.1						7
350.0	0	20	27	18	9	25
351.0	2	0	0	0	0	0
352.0	85	123	183	105	107	120
352.1		1		0	0	0
352.2						20
353.0	23	11	55	22	0	39
354.0	0	34	30	44	29	30
355.0	0	0	9	4	2	4
355.1						4
356.0	46	0	67	0	0	0
356.1					100	40
357.0	0	0	0	0	0	14
358.0	25	0	13	0	0	0
359.0	5	0	0	0	0	14
359.1						1
360.0	58	0	0	0	0	0
361.0	97	186	0	0	0	0
362.0	21	78	9	0	0	0
363.0	354	279	583	333	784	460
364.0	0	12	13	0	1	0
365.0	0	0	52	0	0	0
366.0	0	240	16	0	0	40
366.1	.			86	0	1
367.0	0	0	10	0	0	1
368.0	43	14	0	0	0	1
368.1						33
369.0	11	8	0	0	1	13
369.1						1
370.0	0	0	0	0	0	3
371.0	25	19	14	0	0	0
372.0	3	0	0	0	0	0

SITE	82R	83R	82	83	84	85
373.0	101	104	172	117	138	159
373.1		34		0	0	26
374.0	29	0	76	0	0	32
375.0	10	0	1	4	0	0
376.0	1	0	0	0	0	0
377.0	4	0	0	0	0	0
378.0	5	1	0	0	0	2
378.1		2		0	0	0
379.0	1	2	0	0	3	0
380.0	15	0	0	0	0	0
380.1						4
381.0	32	39	46	46	16	42
381.1		282		0	410	441
381.2					81	0
381.3						15
382.0	325	192	483	423	0	0
383.0	0	492	0	457	464	426
384.0	518	1	269	7	12	5
385.0	146	117	131	96	55	148
386.0	0	0	0	0	9	0
386.1						1
387.0	0	0	0	0	0	0
388.0	0	0	0	0	0	0
389.0	0	0	0	0	0	0
390.0	0	0	21	48	57	24
390.1						14
391.0	0	0	0	0	0	0
392.0	0	0	0	0	0	0
393.0	20	0	0	21	0	40
394.0	0	22	0	0	0	7
395.0	0	10	0	32	21	23
396.0	0	0	0	0	4	11
396.1						16
397.0	0	0	2	12	8	7
398.0	0	2	0	0	0	43
399.0	10	9	15	46	49	67
400.0	0	58	0	0	0	0
401.0	0	0	0	0	3	6
402.0	0	0	0	0	0	0
403.0	0	0	0	0	0	3
404.0	0	0	0	79	28	13
405.0	56	8	0	7	9	14
406.0	0	0	0	0	0	0
407.0	0	0	0	0	0	0
408.0	0	0	0	0	0	0
409.0	0	0	0	0	0	20
410.0	0	0	48	0	10	28
411.0	0	0	0	0	0	0
412.0	0	0	35	0	0	0
413.0	66	24	52	33	5	96
413.1		1		0	0	0
414.0	263	215	0	363	328	379
415.0	63	0	0	0	0	0
416.0	0	0	0	0	0	8
417.0	0	0	0	0	0	0
418.0	208	109	129	542	139	328
419.0	0		0	0	0	1
420.0	0		0	0	9	10
421.0	0	0	0	0	0	0
422.0	51	69	50	56	41	32

Totals	82R	83R	82	83	84	85
	10669	9298	13026	10752	10885	12530

APPENDIX III



SEASONS

February 1-April 30
No drift gill netting is allowed south of Point Arguello.

May 1-September 15
Incidental landings of swordfish shall not exceed landings of shark (thresher and bonito) in pounds during any calendar month.

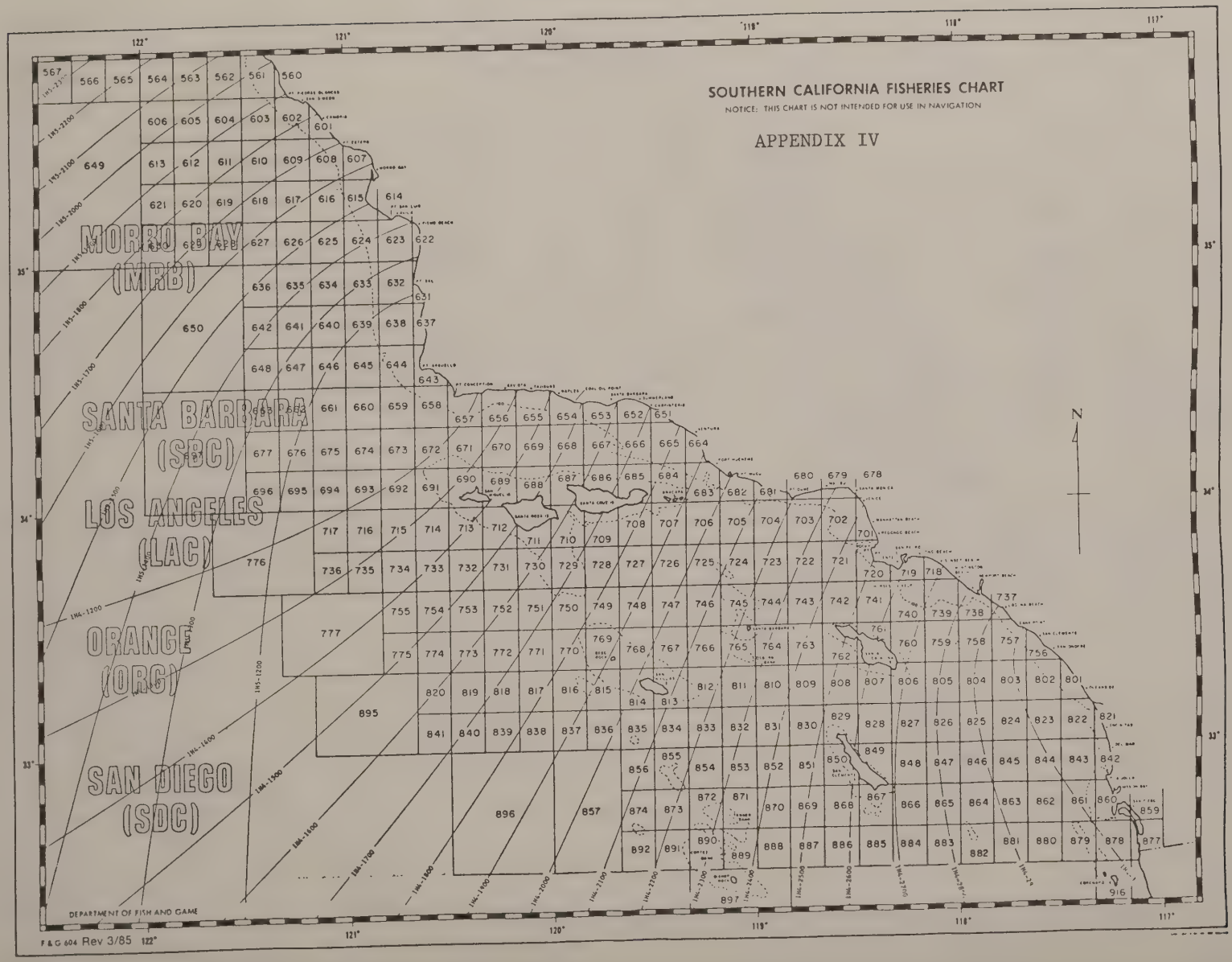
September 16-January 31
Swordfish may be taken without restriction.

NETS IN THE WATER

Drift gill nets must not be in the water until two hours before legal sunset and must be out of the water by two hours after sunrise. Nets may be no longer than 6,000 feet long. The far end of the net must be marked by a pole with a red reflector to which the permittee's number shall be permanently affixed. Beginning May 1, 1985, drift gill nets must not be less than 14 inches in stretched mesh to take shark and swordfish.

TIME AND AREA CLOSURES

See map.


SOUTHERN CALIFORNIA FISHERIES CHART
NOTICE: THIS CHART IS NOT INTENDED FOR USE IN NAVIGATION
APPENDIX IV
MORRO BAY (MRB)
SANTA BARBARA (SBC)
LOS ANGELES (LAC)
ORANGE (ORG)
SAN DIEGO (SDC)
DEPARTMENT OF FISH AND GAME
F & G 604 Rev 3/85